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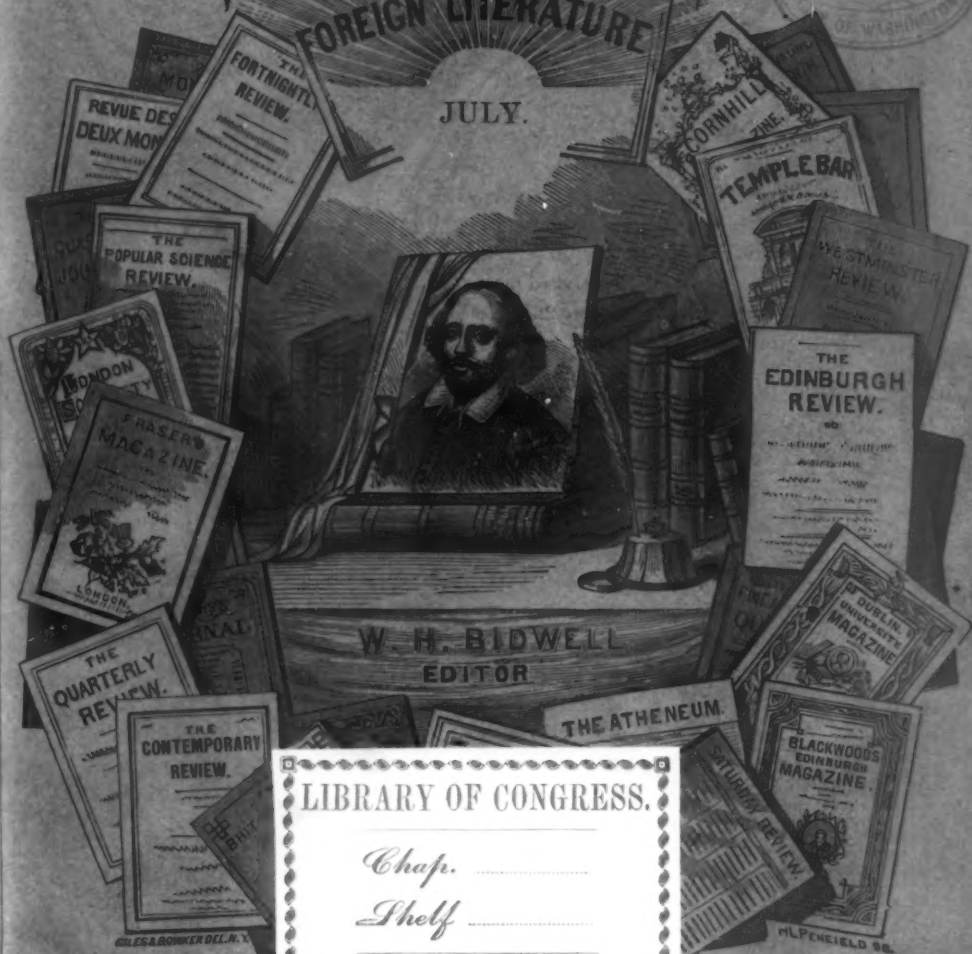
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Vol. XXXII.—No. 1.

THE
ECLECTIC
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JULY.



W. H. BIDWELL
EDITOR

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T. WEBSTER, FINEY

ENG. BY J. J. LADD

THE FROWN.

"FULL WELL THE BUSY WHISPER CIRCING ROUND
CONVEYED THE DUSMAL TIDINGS WHEN HE FROWNED." *Solomon's Song of Solomon*



Eclectic Magazine

OF

FOREIGN LITERATURE, SCIENCE, AND ART.

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Old Series Com-
plete in 63 vols.

THE GOSPEL OF EVOLUTION.

BY DR. CHARLES ELAM.

On the first day of October, 1859, Mr. Darwin marked an epoch in biological science by the publication of his "Origin of Species by means of Natural Selection;" and on the 9th of last month, at the Royal Institution, before a crowded and distinguished assemblage, Mr. Huxley delivered an eloquent address, in celebration of the "Coming of Age" of this work, and of the principles which it enunciates.

Of Mr. Darwin as a naturalist it would be almost a presumption, in any one less gifted or less eminent than Mr. Huxley, to speak. His brilliant genius, and the almost boundless stores of his knowledge in all departments of animated nature—his candid and philosophic spirit, and his evident and constant preference of truth to theory—all these are known and appreciated wherever science has been heard of throughout the civilized world.

Mr. Huxley himself is an accomplished biologist, a distinguished and successful teacher, a fascinating writer and speaker, and, to sum up all in one word, a philosopher, and one who takes large and comprehensive views of every subject that comes under his notice. Therefore, Darwin expounded and illustrated by Huxley is a most formidable combination, and one that might well quench the ardor and damp the courage of any one who wished merely to cavil. Such is, such has ever been, far from my intention. It is true that ever since the first appearance of the work in question I have been a doubter. To my mind the evidence for the theory has ever appeared utterly inadequate, strained, and even contradictory; and the theory itself has seemed to be founded upon and supported by suppositions that are directly opposed to all that we *know* with any certainty as to the continuance of species.

NEW SERIES.—VOL. XXXII., No. 1

Speaking on the subject of scientific beliefs, Mr. Huxley says that "by doubt they are established, and open inquiry is their bosom friend." * There-fore, in the view of establishing the truth, I have on many occasions ventured to express my doubts, with the reasons for them ; further encouraged by this consideration—that as on some important and even cardinal points both Mr. Darwin and Mr. Huxley have on more than one occasion during the past twenty years materially modified their views—doubtless in accordance with what appeared to them to be satisfactory additional evidence—there may possibly be a prospect of still further change, if not of an entire abandonment of the position. As a passing illustration, it may be mentioned that Mr. Darwin not unfrequently said it would be fatal to his theory if it were found that any organs existed which could not have been evolved by minute selective modifications, in accordance with his theory ; † and some time afterward, in his "Descent of Man," ‡ he writes thus :

"No doubt man, as well as every other animal, presents structures which, as far as we can judge with our little knowledge, are not now of any service to him, nor have been so during any former part of his existence. Such structures *cannot be accounted for by any form of selection, or by the inherited effects of the use and disuse of parts.*"

This quotation is made without any intention of "Hansardizing," or even of "collating texts," § but merely to justify the belief that as there is evidently room, within the limits of the theory, for great latitude and variety of opinion, it may be possible that shades of opinion extending even outside those limits may be to some extent defensible.

The *general* doctrine of Evolution teaches that all organic forms, both vegetable and animal, and including man himself, are lineally descended from a few ("four or five") simple exceedingly generalized forms, or most likely, "by analogy," ¶ from *one* form only, by a

process of differentiation by the accumulation of numerous, successive, minute variations. The *special* form of Evolution known as the "Darwinian Theory" tells us, not exactly how these variations were primarily caused, but how their accumulation and fixation were determined, so as to favor the necessary divergences from generalization to specialization to form species, genera, orders, etc.

It shows us that families and species of animals tend to increase in a high geometrical ratio ; that this increase is checked by destructive agencies of various kinds ; and that hence arises a constant "struggle for existence," in which the "weaker go to the wall," and those that are stronger, called, in the language of the theory, the "favored races," survive. These are supposed to be so "favored," in virtue of having come into existence (in obedience to some chance or law, the conditions and causes of which are entirely unknown) with some portion of their organization in so far superior to or different from that of their brethren as to give them some small advantage in the struggle, and to enable them to survive while the others die. This is what is termed "Natural Selection" and the "Survival of the Fittest."

When such a favorable variation as this occurs, it is supposed to be transmitted to the posterity of these survivors, so forming a race a little more adapted to permanency than the original one ; and by the gradual accumulation and augmentation of these advantages, for perhaps thousands or millions of generations, a *new* species is supposed to be originated. A similar process carried on in a fresh direction of variability is attended by similar results, and so various groups are formed, with ever-varying amounts of divergence from the original stock ; such groups arranging themselves, or being artificially arranged, into species, genera, orders, etc., according to the nearness or distance of their relationship. So that all organic beings are blood relations, only differing in proximity. They have all sprung from common ancestry, and are, therefore, essentially and fundamentally of *one nature*. And all this has occurred without the "intrusion" (as it is called by Mr. Huxley) of any but secondary causes—that is, without the intrusion of a Creator.

* "Lay Sermons," etc., p. 279.

† Compare "Origin of Species," p. 189.

‡ Vol. ii. p. 387.

§ See Professor Huxley's "American Addresses," p. 148.

¶ "Origin of Species," p. 424, 5th Edition.

The later Darwinism—much more advanced than Mr. Darwin himself—is far more comprehensive in scope than this. It is called, on the Continent, *Haeckelism*, because, although the doctrines are said to be derived essentially from those of Mr. Darwin, they are, under the exposition of Haeckel and his school, metamorphosed into something indefinitely more violent and uncompromising. Mr. Darwin gives no opinion upon the origin of life itself; Haeckel unhesitatingly affirms its origin by natural law from inorganic matter—without, it may be added, offering any vestige of proof, or even argument in favor of such a position. Mr. Darwin implies and admits the idea of *creation*; Haeckel considers such a theory almost too contemptible to mention, and avowedly recognizes only *one* force in the universe—the Mechanical. This force presides equally over the motions of the planets, the formation of living matter, and the evolution of what we, in our ignorance, have been accustomed to call the reason, soul, and conscience of man.

To Haeckel the most complicated organic phenomena or functions present no more difficulty than any ordinary mechanical interaction. The origin and development of the organs of sense are as comprehensible to him as earthquakes, winds, or tides.* All bodies with which we are acquainted are "equally living"—the opposition that has been held as existing between living and dead matter has no existence. The fall of a stone to the earth, or the formation of a crystal are "neither more nor less manifestations of life than the growth and flowering of plants, the propagation and sensory faculties of animals, or the perceptions and ideas of man."† The "monistic" philosophy alone is competent to explain every natural phenomenon. Everything is originated and accomplished by mechanical causes alone, and not in accordance with any intelligent purpose—by "*causæ efficientes*," not by "*causæ finales*." "There is no such thing as FREE WILL. In the light of the Monistic Philosophy those phenomena which we have been accustomed to consider the most free and most independent, the

manifestations of the human will, are subject to laws exactly as rigid as those of any other phenomena in Nature. . . . Everywhere in Nature is Spirit; and out of Nature we know of no Spirit. Man stands *in* Nature, not *above* it. . . . Soul and Spirit are only differentiated functions of that which we indicate by the expression *Force*, and force is a universal attribute of matter. . . . The magnet that attracts iron filings, the powder that explodes, the steam that propels the locomotive, are all living bodies; they act by living force, exactly as does the sensitive mimosa, which folds up when its leaves are touched; as does the venerable (*ehrwürdige*) *Amphioxus*, which buries itself in the sand; as does the man, who thinks."*

I offer no apology for this somewhat long and tedious sketch of the doctrines zealously promulgated by the leader of modern biological "progress" in Germany, who has also a very large following in our own country. It is well to know, from time to time, exactly *where we are*, what we are called upon to believe, under penalty of forfeiting all claim to enlightenment, or even common understanding, and against what we have to enter our protest, if we do not acquiesce. A belief in some such doctrines as these is now obligatory. They were, up to a recent period, on their trial, and were expected to produce evidence of character, like any other scientific doctrine.

The case is now altered. Mr. Huxley has pronounced, *ex cathedra*, that Evolution is no longer a hypothesis, but "A FACT." The question is not, Has it occurred? but How has it occurred? And any denial of it "is not worth serious consideration."† Woe to those who venture to dissent! Haeckel divides mankind into two classes, the thoughtful and the thoughtless; and defines the former to be those who believe in his doctrines, and the latter those who do not.‡ The learned and modest

* "Anthropogenie," chap. xxvi. pp. 707-8.

† *Op. cit.*, p. 150.

‡ "Natürliche Schöpfungsgeschichte," p. 577. To the opinion already quoted, Professor Haeckel adds that all who do not believe in his version of the doctrine of Evolution are "for the most part" either ignorant or superannuated—see p. 638 of the same work. In

* "Natürliche Schöpfungsgeschichte," p. 21.

† *Ibid.*

Dr. Büchner calls us "mental slaves," "speculative idiots," and "yelping curs," and announces his own "enlightenment and the forthcoming deliverance of his fellow-men from obsolete and pernicious prejudices."* Mr. Huxley himself, in more stately language, pronounces his critics to be "persons who not only have not attempted to go through the discipline necessary to enable them to be judges, but who have not even reached that stage of emergence from ignorance in which the knowledge that such a discipline is necessary dawns upon the mind."† *Jam satis est—DIXI!*

Well, let the confession cost what it may, and whatever amount of ignorance it may imply, it must be made. Some of us to whom these reproaches are addressed are believing exactly what Mr. Huxley himself believed a very few years ago; that is, we are prepared to accept the doctrine of Evolution *subject to this reserve*, that proof shall be given that physiological species can be produced by selective crossing. If we cannot change our belief quite so rapidly as he can, it may perhaps be that the rules and conditions so judiciously laid down by himself have not been fulfilled to our satisfaction, and that we decline to accept a proof of something entirely different, in place of that which has been asked for. My own mental attitude in reference to this question is accurately set forth by Mr. Huxley himself in his "American Addresses." At p. 21 he thus expresses himself:

"Now we have to test that hypothesis. For my part, I have no prejudice one way or the other. If there is evidence in favor of this view, I am burdened by no theoretical difficulties in the way of accepting it; but there must be evidence. Scientific men get an awkward habit—no, I won't call it that, for it is a valuable habit—of believing nothing unless there is evidence for it; and they have a way of looking upon belief which is not based upon evidence, not only as *illogical*, but as *immoral*."

I am content, in any such inquiry as this, to accept the rules of investigation so well laid down by Mr. Huxley. At one time he himself had this *awkward* or

support of this string of wild statements, no vestige of proof or demonstration of any kind is offered, unless constant and monotonous reiteration be supposed to constitute proof.

* "Force and Matter," Pref., p. 86.

† *Cp. cit.*, p. 148.

valuable habit of requiring evidence; and he showed not only that evidence was absolutely essential, but indicated plainly *what kind of evidence* we must demand, before accepting any theory of development. "Is it satisfactorily proved," he asks,* "that species may be originated by selection? that there is such a thing as selection? that none of the phenomena exhibited by species are inconsistent with the origin of species in this way?" At that time, in accordance with the evidence then offered, he returned a negative verdict—viz., that the *proof* was still wanting of any such origin of species; and that, "as the case stands at present, this 'little rift within the lute' is neither to be disguised nor overlooked."† This was written in 1860, shortly after the appearance of Mr. Darwin's work.

Two years later,‡ Mr. Huxley, speaking of "progressive modification" as applied to the origin of species, says that, "should such an hypothesis eventually be proved to be true, *in the only way in which it can be demonstrated—viz., by observation and experiment upon the existing forms of life*, the conclusion will inevitably present itself," etc. On the general question he thus expresses himself, in the same discourse:

"Obviously, if the earliest fossiliferous rocks now known are coeval with the commencement of life, and if their contents give us any just conception of the nature and the extent of the earliest fauna and flora, the *insignificant amount of modification* which can be demonstrated to have taken place in any one group of animals or plants, is *quite incompatible* with the hypothesis that all living forms are the results of a necessary process of progressive development, entirely comprised within the time represented by the fossiliferous rocks."

This carefully considered and weighty judgment was republished in 1874—only six years ago—without, I believe, any indication, either in the discourse itself or in the volume including it, that any modification had taken place in any essential part of Mr. Huxley's views on the subject. This, then, or something very like it, may be assumed as representing the aspect of his mind toward the question of Evolution, not more than six years since. Doubtless, in these

* "Lay Sermons," etc., p. 294.

† *Ibid.*

‡ Anniversary Address to the Geological Society, 1862. "Lay Sermons," p. 226.

years, much has occurred, and many discoveries have been made. One thing, however, is certain—viz., that "observation and experiment on the existing forms of life," once recognized as the *only* test, have given as yet no evidence whatever. *Varieties*, of more or less persistence, have been formed, all having an ultimate tendency to revert to the parent form; but there has not been the faintest indication of the development by artificial selection, however carefully conducted, of a new species, the individuals of which are fertile, *inter se*, and infertile with the parent stock.

From this, however, it would be hasty and unjust to conclude anything. It is only alluded to, in passing, to show that, *in this respect*, the question remains exactly where it was twenty years ago. Under any hypothesis, *specific* variation must be an exceedingly slow process, very unlikely to be witnessed in any definite number of years, or perhaps generations. We do not wish, as asserted of us by Haeckel,* to witness on the table of the physiological laboratory the conversion of a Kangaroo into a Prosimian, of this into a Gorilla, and of the Gorilla into a Man. What we do expect, and what we must inevitably meet with, on any theory of progressive development, will appear shortly. What now has to be considered is the question whether the general evidence for the theory of Evolution has been materially strengthened; and in particular whether the discoveries of the last few years are of sufficient weight to justify Mr. Huxley in proclaiming absolutely (not to say dictatorially) that Evolution is no longer a hypothesis, but an "*historical fact*"—that any denial of it is not worth consideration—and in relegating those who only think as he thought a few years ago to that limbo destined to crass and hopeless ignorance.†

With regard to Mr. Darwin's own doctrines, it is almost certain that everything that can be said, either in support of or in opposition to them, has been exhaustive said years ago. The literature of the controversy would form a

library of no small dimensions, and the arguments for and against have become almost household words. I shall, therefore, only find it necessary to indicate, in briefest outline, the two or three grounds on which I have always felt unable to accept the theory of Natural Selection. No doubt it is only what has been said before; but so long as the doctrine itself is thought worthy of formal reaffirmation, it may be permitted to those who cannot accept it to restate the principal and hitherto unanswered objections to it.

The first and most obvious consideration that strikes the inquirer is this—that, with the exception of the one fact that living forms tend to increase in a geometrical ratio, there is no foundation in all the phenomena of Nature for the hypothesis. Throughout all Nature we know of no direct evidence for the occurrence of any "favorable variation." We do not even know what is, or what would constitute, a favorable variation in any given species. Mr. Darwin himself speaks of it as a useful mental exercise to try and "imagine" what would give one form "an advantage" over another; and says that "probably in no single instance should we know what to do so as to succeed."* In the years that have passed since the promulgation of this theory, naturalists have been everywhere looking out for its practical illustrations, and have found—*not one*. It is only in imagination that favorable variations and "favored races" exist; and yet we are in the habit of discussing them as though they had real existence, and were the familiar facts of our daily experience. It cannot be too clearly stated and understood that we know *nothing* of the occurrence, in Nature, of any variation that has succeeded, or can succeed, in giving its possessor an advantage in the supposed "struggle for life."

I say the *supposed* struggle, because, in reality, there is no such thing, in the sense here understood; or, if by "struggle" is implied any event or combination of events, the result of which can be in any, even the slightest, degree affected by the minute individual variations here supposed. Doubtless count-

* "Anthropogenie," p. 362-3. To use the author's own phraseology, the allegation is made "mit mehr Hinterlist als Verstand."

† "American Addresses," etc.; The Essay on the "Study of Biology," p. 148.

* "Origin of Species," 1st Edit., p. 78.

less myriads of living creatures come into existence of which by far the greater part must be destroyed. One Aphis may be the parent of 5,904,900,000 individuals in five generations; and when these are swallowed up by lady-birds and other enemies in mass, it is no minute individual variation that can avert their fate. The unchecked produce of one pair of herrings would stock the Atlantic in a few years, until there was no room to move; and when these are engulfed by shoals, as a mouthful for the *Balanoptera*, they can make as little struggle for their existence as the grass can make that the ox licks up, or the vegetation of a district that is devastated by locusts. It is the unwritten law of Nature that one race must die that another may live; this other, in its turn, subserving the same end; and so, constantly, until the cycle be complete. Without this law, against which there is no appeal, Nature would be a chaotic impossibility. The destructive influences are so predominant that the carnage is indiscriminate and without struggle.

If this be so, the conclusion is inevitable. Natural Selection is merely an euphuism for a negation—a happy phrase for something that has no existence. In itself it is *nothing*; in its application to the explanation of development of structure and function it is full of irreconcilable contradictions and incoherences. This ought to be sufficient, but there are other, and even weightier, objections. If Natural Selection were a real agency, two definite consequences ought inevitably to result. In the first place, we ought to meet with frequent, if not constant, evidences of transition, so numerous and so various that "all organic beings" would be "blended together in an inextricable chaos." * And, secondly, we ought to observe a slow and gradual, but perceptible, improvement in species generally, especially marked in those whose generations succeed each other rapidly. Neither of these is observable.

With reference to the first, Mr. Darwin sees its cogency to the fullest extent, and he enters into an elaborate argument, too long to extract and too consecutive to condense, to explain *why*

this "chaos" is not observed, and *why* "species came to be tolerably well defined objects." I confess I cannot see that the case is made much clearer thereby. It is not enough to say that the reason is "because new varieties are very slowly formed, for variation is a very slow process, and natural selection can do nothing until favorable variations chance to occur." * By the terms of the hypothesis, the conditions are *always* in operation. The geometric rate of increase is always in progress; the destruction of vast numbers of individuals and the preservation of the "more favored" ones are also constantly in operation; therefore, if there be any uniformity in Nature's actions, natural selection must also be constantly in operation, and its results should be observable, if not in the actual formation of new species, at least in the production of transitional varieties that were becoming gradually less fertile with the parent stock, and more fertile, *inter se*; or, in default of this, in producing a gradual improvement in the original stock. Nothing of all this occurs; the characters of families and species are absolutely constant; and no single instance is known of the kind of modified fertility here alluded to. This is inconceivable on the supposition that Natural Selection is a *vera causa*.

But even supposing it to exist at all, Natural Selection is incompetent to account for a multitude of structures and functions to which any *efficient cause* should be applicable—notably to the earliest rudiments of useful organs. It is always insisted upon that natural selection only acts by preserving and perpetuating *very minute* variations, of such a character as will enable their possessor to contend more vigorously and successfully in the struggle for life. The idea is pretty in theory; but when we attempt its practical application it fails utterly. Wherever we turn we meet with structures which, by no possibility, could have been gradually and slowly accumulated on this principle.

We cannot conceive that a minute pimple on the nose could give any animal "an advantage" in the struggle for life; yet, if there be any truth in the

* Mr. Darwin's own phrase: "Origin of Species," 5th Edit., p. 407.

* "Origin of Species," 5th Edit., p. 178.

doctrine now under discussion, such must have been the origin of the terrible weapon of the sword-fish. The fishing tackle of the *Lophius piscatorius* is equally insusceptible of explanation by this means, as its earliest rudiment must have been entirely useless. Can we conceive that a casually enlarged cutaneous follicle can have promoted the viability of any individual or any race? Yet this must have been, on this theory, the initial condition of the characteristic organ of the mammalia. These instances might be multiplied into thousands, equally obvious, in which the earliest stages of structures must have been absolutely functionless, and therefore *useless* to its possessor. The application of the principle of conservation of *useful* variations only is therefore impossible.

Such organs as the eye and the internal ear are quite out of reach of any explanation by Natural Selection. With regard to the former Mr. Darwin thus expresses himself: * "To suppose that the eye, with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by Natural Selection, seems, I freely confess, absurd in the highest possible degree." Yet, having said so much, he makes the attempt to explain its origin—and fails. The reason is obvious—it *cannot* be so explained; because, owing to the development of the eye being due to simultaneous growth of parts from within and from without, the organ itself would be absolutely useless until it had attained such a degree of development as to admit of these separate parts meeting; and so the principle of preserving any *useful* variety would again be quite inapplicable. The same, with modifications, may be said concerning the internal ear; but Mr. Darwin, with great judgment, makes no allusion to this subject—at least not in any edition that I have seen.

I will not enter into any discussion of the still more serious, I may say insuperable, difficulties connected with the instincts of certain animals—such structures as the electric organ of the gymnotus, and the existence of "neuters"

among ants and bees. I *believe* that Mr. Darwin, at the present time, attaches much less importance to Natural Selection than he did formerly; and it is a fact worthy of notice that Mr. Huxley, in celebrating the "coming of age" of the "Origin of Species" never once alluded to the doctrine of Natural Selection.

The failure of this particular form of doctrine to make good its case does not of itself necessitate the rejection of the *general* dogma of Evolution, which must stand or fall on its own merits. It involves most important questions, and leads to consequences of the weightiest significance. It cannot be settled on one side or the other by authoritative assertion, by felicitous phrasing, or by refusal to entertain any but one-sided views. *Evidence*, and evidence alone, must be our guide to acceptance or rejection; and where, from the nature of the case, *direct* evidence is unattainable, we must make our choice in accordance with neither superstition nor prejudice, but in accordance with rational probabilities and scientific analogies.

The broad principle involved is this—that all living beings are connected together by the ties of relationship and descent from a common ancestry. The general outlines of the doctrines are well known; perhaps it is not so generally known how accurately every step of the specialization and evolution of higher from lower forms is understood. Professor Haeckel is one of those fortunate men to whom nothing is doubtful and nothing is obscure. He knows exactly when the first and simplest living creatures arose, through what stages of variation the succeeding races passed, and by what forms of life our direct ancestors were represented at any epoch in the history of our globe. All this strange story is told to us with the same matter-of-fact narrative simplicity that might be used by a writer of the chronicles of the recent years of his country's history.

The earliest ancestors of man (we are told),* as of all other organisms, *were* living creatures of the simplest conceivable kind—organisms without organs, like our modern *monera*. These originated out of simple inorganic compounds of

* "Origin of Species," 5th Edition, p. 186.

* "Nat. Schöpfungsgeschichte," p. 578.

carbon, hydrogen, oxygen, and nitrogen, about the beginning of the Laurentian period. For the *proof* of this position we are referred back to p. 301, where the same assertion is made, and we are again referred to another page, until at last we find that we are bound to accept this fact on the "weightiest general grounds" (*aus den wichtigsten allgemeinen Gründen*).

From the *monera*, by numerous, successive, minute variations, the result of purely mechanical causes, were developed the *Amœboid* races; from these the *Planæada*; from these again the *Gastræada*. These latter are a very important order of beings. They are described minutely and at great length, and delineated most elaborately. It appears, however, ultimately, that they belong to a purely imaginary world; that there is no evidence whatever of their existence at any period; and that they are placed here to fill a gap which would otherwise sadly have spoiled the symmetry of the theory. None the less is it *absolutely proved* that from these *Gastræada* sprung two great divisions of animal life, one of which branched off into the Zoophytes and Sponges, while the other formed the great trunk of the Worm tribe.

And at this point we are reminded by the author* that by poets and others men are often compared to worms, and spoken of as "poor worms," as "miserable worms," and as "blessed (*allerliebster*) worms," all unconscious of the aptitude of the comparison; for there can remain no possible doubt that "from these were developed all vertebrate animals, and that a long line of extinct worms belonged to our direct ancestry at this period."

But here a difficulty occurs—or what would be a difficulty to naturalists who confined themselves to observation and reason. The *Vertebrata* must be developed from something; and as yet there has been no smallest indication of anything like a spine, or a rudiment of anything that could represent or be converted into one. It costs our author nothing but a stroke of his pen to invent the *Chordonia*. And what is the *Chordonia*, and whence did they come? They were developed from the worms by the forma-

tion of a spinal marrow and a *chorda dorsalis*!*. Nothing more—the most trifling modification!—and we are at once provided with the root and stem of the whole Vertebrate division. It is scarcely any drawback to this stroke of genius to say that there is no evidence whatever that such an order of living beings ever existed, that no one has the least conception of what they were like, or of any of their attributes. That they existed, about the Silurian period, is *most certain*; otherwise the Ascidian, on the one hand, and the Amphioxus and the Acranian fishes generally, on the other, would have been left without an ancestor!

After this, however, we get on smoothly and well. From the *Chordonia* arise the lowest fishes, then the Lampreys, the Sharks, and the *Dipneusta*. These were succeeded lineally by the *Sozobranchia* (animals something like the Proteus and the Axolotl); when we have arrived safely as far as *Amphibia*. Here again a slight difficulty threatens, but only threatens. It is got over by the interpolation of another imaginary order of beings, the *Sozura* (or *Schwanzlurche*), creatures resembling Tritons and Salamanders. "They lived about the second half of the Palæolithic age, in the Permian period, and, perhaps, even so early as the Carboniferous. The *PROOF* of their existence is this: that the *Schwanzlurche* are a necessary middle term between the preceding and the following orders!"† Further than this no one knows anything about them.

Still less, if possible, is known about the next order in succession, of which these problematical creatures were the necessary forerunners. It seems that some common stem was needed from which to derive reptiles, birds, mammalia, including Man; and this stem was supplied by another fanciful order of beings, called *Protamniota*. They arose from "unknown *Schwanzlurche*" about the beginning of the Secondary period, in the Trias, or, perhaps, in the later Permian. What the *Protamniota* were like (says Mr. Huxley) ‡ "I do not suppose any one is in a position to say." Probably not. To them, however, succeeds another order, described as the

* "Anthropogenie," p. 398.

* "Nat. Schöpfung," p. 583. † *Ibid.*, 587.

‡ "Critiques and Addresses," p. 318.

"long-since extinct and *unknown* stem or trunk from which proceeded all the *Mammalia*, which we call *Promammalia*." It is supposed that these animals were probably nearly allied to the *Monotremata*, the *Ornithorhynchus*, *Echidna*, etc. It costs but little—on paper—to show how these were naturally and easily derived from the *Protamniota*, merely "by manifold advances in internal organization, by the conversion of scales into hair, and by the formation of a lacteal gland to furnish milk for the nutrition of the offspring."*

From this time to the end we are on more familiar ground ("wird uns heimischer zu Muthe"). We have arrived at the *Marsupialia*, from which diverge, in one direction, the carnivora; in another, whales and herbivorous animals; while the direct pedigree of Man is carried forward through the *Prosimia* (or *Halbaffen*), the nearest living allies of which are the *Indris* and *Loris*; through the catarrhine apes, represented most nearly, perhaps, by the *Semnopithecus*; through the *Anthropoid* apes, Orang, Gibbon, Gorilla, and Chimpanzee; and through the final stage, before Man himself—that of the *Pithecanthropi*, or "speechless original men."

Of these, our immediate predecessors—whose nearest modern allies are "deaf mutes, idiots, and cretins"—†—we are told that they lived apparently about the close of the Tertiary epoch. They were developed from the *Anthropoid* apes by assuming, permanently, the upright position, and by the corresponding differentiation of the anterior and posterior extremities. "Although these ape-men (*Affenmenschen*) much more closely approximated to perfect man than the *Anthropoid* apes, not only in external form, but also in their inward spiritual development (*innere Geistesentwicklung*), they still lacked that special characteristic of Man, proper—articulate speech, and with it the development of the higher self-consciousness and conception of ideas."‡ The *certain proof* that these dumb men preceded us is to be found in the science of comparative philology! And we are to expect to find their fossil remains at some future time, when what

is now the bed of the Indian Ocean is upheaved and inhabited.

Finally, the *true men* were developed from the foregoing by the gradual conversion of brute-howling into articulate speech; and along with this function went naturally, hand-in-hand, the development of the larynx and the brain. This took place in the early Quaternary or Diluvian period, or possibly earlier, in the later Tertiary."* And, as by the almost general consent of comparative philologists, all known languages cannot be derived from one common root, so there must have been several separate transitions from the *Pithecanthropi* to the true-speaking men.†

On its own merits it would scarcely have been necessary to enter into so lengthy an analysis of this pedigree. But the "Natürliche Schöpfungsgeschichte" of Professor Haeckel has acquired an adventitious importance by being stamped with the seal of approval by Mr. Huxley; and, as an almost natural consequence of this, the doctrines therein contained are accepted, doubtless, by thousands in our own country, as well as in Germany, as constituting the foundation of their belief. In the *Academy*, in 1869 (an essay republished in 1873),‡ Mr. Huxley so far indorsed this work as to say that "there is *only one point* upon which I fundamentally and entirely disagree with Professor Haeckel, but that is the very important one of his conception of geological time. . . ." We are therefore justified in supposing that this strange farrago of wild conjecture, fertile invention, and reckless assertion contains the essential summary of the doctrine of Evolution, to the belief in which Mr. Huxley pledged himself, when, on the 9th of April (as on many other occasions), before a distinguished assemblage of scientific men and others, he announced, *ex cathedra*, that Evolution was no longer a hypothesis, but an historical fact, and that, in truth, no other theory could be said to have an existence, except one which he seemed to consider too "shocking and revolting to common-sense" to do more than distantly allude to. No doubt the reference was here made to what Mr. Herbert

* Haeckel, *op. cit.*, p. 588.

† "Anthropogenie," Table, p. 378.

‡ "Natur. Schöpf." p. 591.

* "Natur. Schöpf." p. 591.

† *Ibid.*

‡ "Critiques and Addresses," see p. 310.

Spencer considers the effete and impossible idea of Creation.

When we leave the region of poetry, or that domain of quasi-science so well covered by writers like Jules Verne, we are entitled to expect something beyond mere authoritative dogma—something, at least, *resembling* proof and demonstration. If, in this present case, we require this, we are naturally surprised to find on how small and feeble a foundation of fact this mighty superstructure, which is now and for all future time to supersede all mere speculation, is based. Evolution has been proclaimed, and reaffirmed so constantly, so loudly, and with such unbounded confidence, that it has been implicitly accepted by many, under the very natural conviction that men illustrious in science would not so positively affirm these positions unless they could be supported by evidence, forgetting that the history of science in all time abounds with similar instances where zeal has outrun discretion.

The first and most obvious consideration that strikes us, in entering upon the inquiry, is this, that all that we *know* with any *certainly* concerning organic beings lends no support to any hypothesis of Evolution. History, observation, and experiment alike proclaim the absolute constancy of specific forms—varying no doubt in secondary and non-essential characters to even an indefinite extent, but never passing the limits of the *species*; *species* being generally understood, in this argument, to imply a group of animals producing offspring continuously fertile, *inter se*, and with the parent stock. This is absolute and without exception. No one instance is known of the variation here implied. Species A invariably produces species A, and even though it may be A₁ or A₂, or A₃—or even An—each of these, to the end of the chapter, presents the *physiological* characters of the parent A, and at no stage is there observable any modification of the original mutual fertility.

Thus *direct* testimony is wanting, and although we were *once* taught by Mr. Huxley that the "*only way*" in which the hypothesis of Evolution could be demonstrated would be by "observation and experiment on the existing forms of life," I would not lay too much stress on this point. On any theory of progressive modification, change of specific type

must be an extremely slow process; and the few brief years over which the longest personal observation can extend, or even the few thousand years of our historical records, must be but as a moment compared with the countless ages that have elapsed since the formation of the Cambrian system.

Still the fact remains that all our positive and direct knowledge as to species contradicts the Evolution hypothesis. The evidence for it must therefore be inferential. It is supported chiefly on three grounds. The first relates to the resemblances and affinities of structure and function obtaining everywhere throughout animated Nature, which are supposed to be inexplicable on the theory of separate creation, and only to be understood as the result of a common descent. The second refers to embryological considerations—equally mysterious on the theory of Creation—equally clear when viewed by the light of Evolution. The third is derived from the study of Palæontology, and the geological record generally, which is said to reveal certain successive forms of animal structure so arranged that it would be "an insult to common-sense" to attempt to explain them on any other hypothesis than that of Evolution.

As a psychological study it is interesting to observe how many things are deemed *impossible* to the Infinite wisdom and power which (by the terms of the supposition) presided over the arrangements of our world, which are perfectly clear and comprehensible when considered as the result of blind chance and the operation of mechanical causes only. The "grand fact," says Mr. Darwin, "of the grouping of organic beings seems to me utterly inexplicable on the theory of Creation."^{*} It might appear difficult to say *why*, unless it be by confessing that perfect intelligence could not devise, though an interminable series of accidents might accomplish, a scheme calculated to excite the admiration of all who study it. And again, "Why should the brain be inclosed in a box composed of such numerous and such extraordinary-shaped pieces of bone? How *inexplicable* are these facts on the ordinary view of Creation!"[†]

The most noteworthy of Mr. Darwin's

^{*} *Op. cit.*, p. 471.

[†] *Ibid.*, p. 436.

puzzles refers to the existence of certain formations in animals, which "bear the plain stamp of *inutility*." These are all pronounced "utterly inexplicable," on the view of "each organic being . . . having been separately created;" but natural selection reveals Nature's "scheme of modification, which it seems that we wilfully will not understand."* In other words, by the terms of one hypothesis, boundless wisdom and power, working intelligently, though often mysteriously to us, fails to explain an *apparently useless* structure; which, however, is made abundantly plain and comprehensible by another hypothesis, the very existence of which depends on the supposed selection and preservation of "*useful variations*" only!

In like manner Mr. Huxley loses no opportunity of assuring his readers and hearers that nothing but Evolution can account for the revelations of the geological record, and treats with unutterable contempt and indignation the idea that creation may have "intruded," and "the notion of any interference with the order of Nature."† He finds that the Crocodiles of the Chalk Period differ somewhat from those of the "Older Tertiary;" and these again are not identically the same "with those of the Newer Tertiaries, nor are those identical with existing forms."‡ He finds in the Eocene an *Orohippus*; in the Miocene a *Mesohippus* and *Miohippus*; in the Pliocene a *Pliohippus* and an *Hipparion*; and in the "recent" period a *Horse*; all these presenting very close and interesting morphological relationships. He finds a succession of crayfish, from Mesozoic times until now, which are not exactly alike, and to each of these series he infallibly appends a little discourse tending to the glory of Evolution and the discredit of Creation, all on the same type as that which concludes his very interesting monogram on the crayfish. These, he says,

"Have been gradually evolved in the course of the Mesozoic and subsequent epochs of the world's history from a primitive Astacomorphous form.

"And it is well to reflect that the only alternative supposition is that these numerous

successive and co-existent forms of insignificant animals, the differences of which require careful study for their discrimination, have been separately and independently fabricated and put into the localities in which we find them. By whatever verbal fog the question at issue may be hidden, this is the real nature of the dilemma presented to us not only by the crayfish, but by every animal and by every plant; from man to the humblest animalcule; from the spreading beech and towering pine to the micrococci which lie at the limit of microscopic visibility."

Now on this question there has been a good deal of misrepresentation, or misapprehension at least. It must be evident to any one who will think for himself for one moment, instead of being led away by empty phrasing, that the one theory is not only as applicable but as simple and rational as the other, in accounting for any of the facts of natural history or palæontology. If Creation, as a theory, be put out of court altogether as an *a priori* impossibility, under all conditions—well and good, there is nothing more to be said. But if it be allowable to argue the point at all, then surely there is no difficulty in understanding how, under either theory, certain arrangements are brought about. If species A be *developed* ultimately into species B, and this again, after long ages, into species C, and so on through the alphabet, this evolution, by the terms of the hypothesis, takes place by virtue of each succeeding one being, in some small degree, better fitted for its *then* surroundings than its predecessor was or would have been. The theory of Evolution can only account for each animal having attained its present structure, appearance, functions, and geographical distribution, on the supposition that these were *most appropriate* to it and to each other; any individual or family having an organization unfitting it to struggle with its surroundings, as climate, etc., being ruthlessly exterminated. In other words, *Evolution* has shaped out and located each species or race into that form and in that position which will be the most perfectly adapted to each other. In this sentence substitute "the Creator" for "Evolution," and we find fulfilled the very first and essential condition of all our ideas connected with intelligent creation.

It is no doubt possible, by well-selected language, to make the "fabrica-

* *Op. cit.*, p. 480.

† "American Addresses," p. 2.

‡ "Lay Sermons," etc., p. 200.

tion" of successive crayfish seem absurd enough; but if the small differences referred to were brought about by any *vera causa*, to subserve any useful purpose, there is assuredly nothing ridiculous in attributing the same *purpose* to an intelligent act of Creation, including also *modification* perhaps, rather than a new "fabrication," in accordance with an axiom which has always appeared to me as one of the most philosophic phrases of modern times—that of "*the continuous operation of the ordained becoming of living things.*"*

What *ought* Palæontology to say in support of Evolution? and what *does* it say? It ought to reveal to us an almost infinite variety of transitional "links which must formerly have connected the closely-allied or representative species found in the several stages of the same great formation" (Darwin). As a matter of fact "geology assuredly does *not* reveal any such finely-graduated organic chain; and this is, perhaps, the most obvious and gravest objection which can be urged against my theory."† Mr. Darwin then attempts to account for this on the principle of the imperfection of the geological record, all of which is sufficiently well known. On the other hand, Sir Charles Lyell, a geologist at least as eminent as any who have succeeded him, appeals to this same imperfection as an argument rather telling *against* than in favor of Evolution. He says: "It has always appeared to me that the advocates of progressive development have *too much overlooked* the imperfection of these records; and that, consequently, a large part of the generalizations in which they have indulged in regard to the first appearance of the different classes of animals, especially air-breathers, will have to be modified or abandoned."‡

There is no doubt that of late years there has been evinced a tendency toward other views on this branch of the subject; but whether on sufficient grounds remains to be shown. In 1862 Mr. Huxley was of opinion that an impartial survey of the positively-ascertained truths of Palæontology was calculated to "*negative*" the doctrines of

progressive modification."* In 1870, certainly in accordance with further evidence, Mr. Huxley somewhat modified this "Brutus-like severity" of doctrine. He fully confirmed it "so far as the *invertebrata* and lower *vertebrata* are concerned," but he added, in reference to the higher *vertebrata*, that "the results of recent investigations, however we may sift or criticise them, seems to me to leave a clear balance in favor of the doctrine of the Evolution of living forms one from another."† Finally, as a sequel to further discoveries in reference to the various serial forms of animal remains alluded to above, especially those of the horse and its predecessors, Mr. Huxley proclaims Evolution to be an established historical fact, and refuses to consider any further objection to it.

From Mr. Huxley's standpoint this is legitimate enough. By him and his school it is held as a foregone conclusion that the theory of special creation is a "revolting" absurdity. For them, also, succession and typical resemblance necessarily imply consanguinity and common descent—still a perfectly logical conclusion from their premises. To those, however, who prefer to distinguish between things that differ, these are by no means *necessary* truths.

What do these serial arrangements—of horse, of crocodile, of crayfish, and many other creatures—prove? They prove *succession* of similar, yet in some respects dissimilar, forms; they *suggest* descent from a common ancestry; and this *suggestion* will represent doubt or demonstration, according to the varying preparedness or prejudice of the mind into which it enters. Even were it granted, for the sake of the argument, that all these successive forms had respectively descended from a common stock, we should still be a whole world apart from any absolute *proof* of the doctrine of Evolution.

Take the case of the horse, as a typical illustration, and the one which seems probably to have taken the strongest hold on Mr. Huxley's mind. It is not necessary to enter into any detailed description of the successive forms found

* Prof. Owen's "Palæontology," p. 3.

† "Origin of Species," 1st Edition, p. 280.

‡ Address to the British Association, 1859.

* "Critiques and Addresses," p. 182.

† *Ibid.*, p. 183.

between the Eocene *Orohippus* and the true horse of our own epoch. Suffice it to say that these remains present a most interesting and instructive series of modifications in certain parts of their structure, and notably of the feet. These modifications are supposed to indicate *specific* differences; and I would not for one moment attempt to throw discredit on Mr. Huxley's unequalled knowledge of the subject by suggesting any doubt that for *purposes of classification* they may be so considered. But it is not, *therefore* and necessarily, to be taken for granted that *physiologically* they each represent a different *species*, in the sense in which *species* is generally defined in these discussions—viz., as a group which produces offspring continuously fertile *inter se*, and not continuously fertile with allied groups.

I assert nothing, for I have no means of knowing; but I ask, Will any naturalist affirm that such can be *proved* to be the case in any of these instances; or that the differences between them are greater than those which *occasionally* are observed in species which we know, by the above test, to be physiologically the same? The formation of the feet differs considerably; but is this a difference of species or only of race? With reference to the lateral toes of the hipparion, Mr. Huxley tells us that "they could have had but very little functional importance, and they must have been rather of the nature of dew-claws, such as are to be found in many ruminant animals."* Such being the case, it is only what might be expected, that these toes, in accordance with a well-known law, should dwindle, and be represented, after many succeeding generations, by mere rudiments. There seems also nothing impossible in the supposition that, in accordance with gradual changes in the physical conditions, and the medium generally in which they lived, similar lapses of functional importance, and a similar gradual dwindling and partial disappearance of certain elements of the extremities, may have occurred in *all* these successive *races* without any absolute change of *species*, physiologically.

Of the extent and nature of the modi-

fications that may be caused by physical surroundings, our knowledge is almost in its infancy. We know some *facts*—of their true cause we know *nothing*. Pallas relates that in certain sheep of Central Asia the tail disappears, and is reduced to a simple coccyx, on each side of which is a hemispherical mass of fat weighing twenty or thirty pounds each. This peculiarity entirely disappears in a few generations, when the animals are removed to another climate. American oxen are descended from European stocks. In Buenos Ayres their descendants have preserved the horns; in Mexico they have lost them.* A race of Corsican deer was at one time supposed to be a new species, until one of them was taken to Paris for some years, where it gradually assumed the usual typical form.

Joints also and appendages seem to be very variable, from undefined causes, without necessitating any physiological change of species. An instance, though one of not much importance, is met with in the common dog. Some of the smaller dogs have only four toes on the hind foot, while in some of the largest the fifth is fully developed. Yet physiologically they are equally *dogs*. In some pigs there is observed a very remarkable and important modification of the foot, in which a third median toe is developed, and the whole is enveloped in a single hoof, so representing the *solidungulate* type. This is at least as remarkable a modification as that of the foot of the hipparion as compared with that of the horse, yet these remain *physiologically* pigs. Oxen have been found with thirteen ribs and an additional vertebra, yet they are still *oxen*.

These few illustrations, which might be multiplied indefinitely, must be taken for just as much as they are worth. It is not professed that they *prove* anything whatever—except this, that we ought to be very cautious in proclaiming loudly and dogmatically the absolute demonstration of an untenable hypothesis on the strength of facts which will bear many different interpretations, each one of which is more in accordance with observed analogies than the one so promulgated. So far as these considera-

* "American Addresses," p. 81.

* Quatrefages.]

tions lead us, the question is still an open one.*

But apart from what geology does *not* tell us, there is a history which it does relate, or suggest—a history which is by no means in accordance with the theory now under discussion, which, on the contrary, seems absolutely to controvert it. The succession of forms of life on our globe is demonstrably *not* such as ought to be the case on the theory of Evolution. It was not the small and feeble species or most generalized forms that first appeared, either among mollusks, fish, reptiles, or mammalia. We look in vain now for the representatives of the gigantic fishes of the Old Red Sandstone. And where are the mighty reptile tyrants of air, earth, and water of the Oölite? Have they been "improved" and "preserved" into the puny races of modern reptiles? Where are the ponderous monsters that shook the Eocene and Miocene earth with their massive tread? Where is the megatherium, unless *improved* into the modern sloth? These races appeared in the plenitude of their development and power; and as their dynasty grew old, it was not that the race was *improved* or *preserved* in consequence, but they dwindled, and were, so to speak, degraded, as if to make room in the economy of Nature for their successors.†

*. Were it permitted to us to adopt the same rules of argument as those used by the Evolutionists, there would be no difficulty in replying trenchantly to this question the Horse series. I should at once say that the Horse, as we know it now, existed contemporaneously with the *Orohippus* in the *Miocene* period, and that there had been no change from that to modern times. When the very obvious objection was made to this, that it was a mere assertion, unsupported by any evidence whatever, I should appeal to the "imperfection of the geological record," and assume that were it perfect it could do no other than testify in my favor. If it were suggested that this mode of argument was not *science* of any sort, and would prove any absurd proposition whatever, I should then reply, that the "*certain proof*" of the then existence of the horse was to be found in the fact that it was *necessary for my theory*. (See Haeckel's "*Natürliche Schöpfungsgeschichte*," chap. xxii. *passim*, and especially at pp. 583 and 587.)

† A vast mass of interesting matter bearing upon this question may be found in Mr. Huxley's Essay on "*Palæontology and Evolution*," included in the volume entitled "*Critiques and Addresses*," 1874.

From all this it would appear to result that we can obtain no indication of any support for the doctrine of Evolution either from history, observation, experiment, or Palæontology. Any conclusion from experiment is, perhaps, not to be expected as yet; nevertheless, were the characters of species so plastic as it is sought to prove, it can scarcely be conceived that some slight evidence of this modifiability would not have been met with, either in Nature or as the result of artificial selection. We do not expect to witness the entire process of the conversion of one species into another, either naturally or artificially; but it is surely a reasonable surmise that among the countless millions of variations that must be constantly in progress, on this hypothesis, we should occasionally meet with one which would fulfil in some small degree the necessary conditions—that is, one that would exhibit some incipient failure of fertility with the parent stock, and increased fertility with others varied in like manner. But it is not suggested that *one* such instance of this, the very first condition of formation of a new species, has ever presented itself.

Among animals we observe at least five distinct types, between any two of which there is no known or suspected transitional form—the Protozoa, the Cœlenterata, the Mollusca, the Annu-lata, and the Vertebrata. We have seen above to what straits Professor Haeckel is reduced when he attempts to derive these from one common stock, and to draw out a plan of the succession of forms of life. At many points in his series he has to interpolate entire orders, which are so purely imaginary that he does not even profess to have any evidence to adduce for their existence, except that they are "necessary" for the completion of his theory. For the most part these may be passed over in silence; but one of them is at once so audacious, so cumbrous, and so impossible that it requires a passing notice.

The connection of the *Vertebrata* with the lower members of the animal world, and the difficulty of their derivation, by natural process, from any known or imaginable forms, has always presented a serious stumbling-block to the Evolutionist. In his work on the "*Descent of Man*" Mr. Darwin traces the human

pedigree quite smoothly and easily downward as far as the fishes; but there a difficulty arises: How came the fish to have a vertebral column, and from what was it evolved? There appeared no readier way of answering this inquiry than by the discovery that the larvæ of the Ascidians (invertebrate hermaphrodite marine mollusks) presented some analogy to the Vertebrata in certain points of their structure and development. Hence Mr. Darwin considered himself "justified in believing that at an extremely remote period a group of animals existed resembling in many respects the larvæ of our present Ascidians, which diverged into two great branches—the one retrograding (!) in development and producing the present class of Ascidia; the other rising to the crown and summit of the animal kingdom by giving birth to the Vertebrata."*

Haeckel indulges in no such half-hearted conjectures as this. When the period arrives when the Vertebrata *must* be introduced, there is no craning before he leaps, no pusillanimous hesitation. He takes a worm, and with a stroke of his pen endows it with a spinal marrow and a chorda dorsalis, on "mechanical principles;" and having further improved it he calls it *Chordonia*—the parent of all the Vertebrata—and a sort of distant relative, perhaps second cousin, of the Ascidian. It is placed in its natural order as though it had a legitimate claim to be there; and it never seems to have occurred to the author that, even were it true, this process in no one respect resembled Evolution. I feel some reluctance to speak of this as it deserves; but I consider it as little short of a monstrous literary fraud, as it would be a commercial fraud to pass a forged note in a packet of real ones. I may add that, if there be any truth or reality whatever in the principles of the science of Embryology, it is as impossible for the Ascidian to stand in this relationship to the Vertebrata as it would be for any member of a genealogical tree to be represented at one and the same time as his own grandfather and his own grand-nephew. I have given the demonstration of this position

elsewhere,* and space does not admit of even a condensed repetition of it.

I can only briefly allude to the extension of the theory of Evolution to Man. To the doctrine which teaches that Man is lineally descended from a catarrhine ape, Morphology gives some qualified support; Embryology, fairly considered, renders it very improbable; the science of Man demonstrates it to be impossible.

It may be conceded at once that the resemblance, in essential type, between man and some apes is very strong indeed; that "the structural differences which separate man from the gorilla and the chimpanzee are not so great as those which separate the gorilla from the lower apes,"† and that "the human body contains no single organ which might not have been‡ inherited from the apes." Nevertheless there are differences, and of such a kind as renders it highly unlikely that man is merely a higher ape. It is very improbable that smooth-skinned man should have descended (at least by *any* process of selection) from hairy ancestry, but this is not much to be relied upon. It is improbable in the extreme that a walking animal should descend from a climbing animal, so improbable that it has appeared to many, even of those who hold the doctrine of Evolution, as a fatal bar to the ape theory; and they have attempted to trace out some other brute origin for man.§ It is supremely improbable that man, the most helpless and the longest helpless of all animals, should be descended, in accordance with any rational theory of *progressive* development, from any of the brute creation.||

* "Winds of Doctrine."

† "Man's Place in Nature," by Prof. Huxley, p. 103.

‡ Haeckel's "Anthropogenie," p. 694; only that instead of "might not have been" Haeckel says "is not" inherited, etc.

§ M. Quatrefages ("The Human Species," p. 107) says on this subject that "from the point of view of the logical application of the law of *permanent characterisation* . . . man cannot be descended from an ancestor who is already characterized as an ape, any more than a catarrhine tailless ape can be descended from a tailed catarrhine. A *walking animal* cannot be descended from a *climbing one*."

|| C. von Baër gives it as his verdict that it is *impossible* that a man can by *progressive development* (*fortschreitende entwicklung*) have

* "Descent of Man," vol. i. p. 206.

But perhaps the most significant point of difference in the mere mechanism of apes and men is the opposability of the great toe, or the thumb of the posterior hand, in the former, as contrasted with the same structure in the latter. The importance of this is well understood by the advocates of Evolution, and Haeckel thereupon affirms most positively that this faculty or formation is *not* peculiar to apes, but that there are "races of wild men in whom the great toe is as opposable as the thumb,"* adducing other illustrations also. Against this we have the positive testimony of an accurate and cautious observer, Mr. Wallace, to the following effect :

"The common statement of travellers as to savages having great prehensile power in the toes has been adopted by some naturalists as indicating an approach to the apes. But this notion is founded on a complete misconception. Savages pick up objects with their feet, it is true, but always by a *lateral* motion of the toes, which we should equally possess if we never wore shoes or stockings. In no savage have I ever seen the *slightest* approach to *opposability* of the great toe, which is the *essential distinguishing features of apes*; nor have I ever seen it stated that any variation in this direction has been detected in the anatomical structure of the foot of the lower races."†

The evidence from Embryology is of too technical a nature to be introduced here. It may be briefly indicated as turning upon the fact that the order of embryonic development in the ape, in some most important parts, is in *inverse order* to that of man, from which the Embryologist will conclude, necessarily and absolutely, that man is *not* descended from an ape.

Before leaving the subject of *bodily* relationship, it may be suggested that on either theory of Ontology, whether of special creation or of Evolution, there is exactly the same *reason* for the very close resemblance in structure that obtains between man and the higher animals. It is acknowledged on all hands, without the necessity for the prolix demonstrations that have been given of the position, that man is an animal, however much more he may be, and whatever his origin; and that he has to perform a great-

er variety of *selected activities* than any other animal. If, then, animals generally are constructed or evolved according to the type best adapted to their special activities, it follows, as a matter of logical necessity, that man should be constructed in accordance with the best and highest of these types. With reserve, I *believe* that man is the most perfect of machines—that is, that, *ceteris paribus*, he can do more foot-pounds of work in proportion to *fuel* than any other animal or machine.

When we come to the science of Man specially, we find that the evidence for his distinct nature, consequently for his independent origin, is overwhelming; the demonstration is easy, precise, and incontrovertible. By the possession of articulate speech, of a conscious reasoning* and reflective faculty, of a moral sense and a religious sentiment; by his conception of abstract ideas; by his faculties of judgment and conscious volition; it is evident that man is neither *from nor of* the brute; that he "differs fundamentally from every other creature which presents itself to our senses; that he differs absolutely, and therefore differs in origin also."† In one comprehensive particular he also asserts that he stands *alone*—in his capability for continuous progress and his power of utilizing the "registered experience" of successive generations.

Finally, whatever may be his structure, it is recognized on all hands that there is an altogether "*immeasurable and practically infinite* divergence of the human from the Simian stirps."‡ This is a judgment of the utmost importance, and involves a perfect demonstration of our position. For, whether the structural difference between man and the apes be great or small, it is certainly *finite*, while the divergence in essential nature is *practically infinite*. We are, then, driven to this conclusion—that the nature of man is not a "function"§ of his organization, and that there is *something* super-added which is not provided for by any

* Man is "the *only* consciously intelligent denizen of this world." Mr. Huxley's "Man's Place in Nature," p. 110.

† Mr. Mivart's "Lessons from Nature," p. 190.

‡ Mr. Huxley, *op. cit.*, p. 103.

§ I here use the term "function" in its mathematical sense.

originated from an ape. Virchow is of the same opinion.

* "Nat. Schöpfung," p. 568.

† "Tropical Nature and other Essays," by Alfred R. Wallace, pp. 289-90.

theory of Evolution, of selection, or of direct inheritance. On this supposition, all that has been urged as to organic resemblance comes to have no significance, and the verdict must be that man's descent from the apes is, if not impossible, at least not proven. Q. E. D.*

The differences in the moral and spiritual nature of man and those of the brute have, of course, not been overlooked by the Evolutionists, and they have denied, neutralized, or evaded them according to their respective lights and tendencies. Thus, with regard to articulate speech,† one school, represented by Dr. Büchner (the happy propounder of the fact that *Holothuride* engender snails!), openly proclaims that animals have articulate speech. Mr. Darwin, with his usual candor, confesses that this endowment is "peculiar to man." Mr. Huxley agrees, but attributes the want of it to some "inconspicuous structural difference."

The same diversity appears with regard to the moral sense, and this is the last point which can be noticed at this time. It has been seen how the doctrine of Evolution, as elaborated by Professor Haeckel and indorsed by Mr. Huxley, leads us, logically and inevitably to the conclusion—which moreover it is not sought to disguise—that there is no such thing as *Free Will*. From this also it follows, as an indential proposition, that there can be no such thing as a *moral sense*; or rather, that any term or phrase implying *morals*, as such, in any way, has no possible meaning. We may have *conduct*—and that conduct may possibly be of any degree of excellence, in its adaptation and obedience to gradually evolved social requirements; but of *morals* proper, as generally understood, there can be no question. Haeckel cuts the knot arising out of these considerations with characteristic directness. After discussing the subject at some length he says, "The final result of this comparison is this—that between the highest brute-souls (*Thier-*

Seelen) and the lowest human souls there exists only a small *quantitative* and no *qualitative* difference; and that this difference is *much less* than that between the highest and lowest human souls, or between the highest and lowest brute-souls."* On the other hand, the school represented by Mr. Huxley and Mr. Herbert Spencer denies to man the possession of any special inherent moral sense—that is, any other than such as can be, and has been, derived by way of Evolution from more simple ideas, such as the desire for pleasure, the avoidance of pain, or the fear of punishment. Commenting on Mr. Mivart's expression that there is "no trace in brutes of any actions simulating morality which are not explicable by the fear of punishment, by the hope of pleasure, or by personal affection," Mr. Huxley says that "it may be affirmed with equal truth that there is no trace in men of any actions which are not traceable to the same motives. If a man does anything, he does it either because he fears to be punished if he does not do it, or because he hopes to obtain pleasure by doing it. . . . "†

To the majority of thinking men, who still hold that we have some innate perception of right as right, and of wrong as wrong, irrespective of consequences, however diverse or distorted such ideas may be, these doctrines may be left to speak for themselves. It is impossible now to enter upon so broad a subject as the nature and origin of the moral sense. Happily for a benighted world, a ray of light shines through the worse than Cimmerian darkness into which we seem to be plunging. It may prove to be but a very rushlight, yet it proclaims itself loudly to be the true light, and we welcome it as a *promise* of illumination, trembling and shuddering meanwhile at the dangers through which we have unconsciously been passing, like the lost traveller who faints when the morning reveals to him the horrors through which he has passed in the darkness of the night.

Mr. Herbert Spencer sees clearly that "moral injunctions are losing the authority given by their supposed sacred origin;"‡ and lest, unhappily, the world

* Mr. Wallace's arguments in favor of the special origin of man are cogent, clear, and philosophical, but it would be doing them an injustice to condense them into the small space at my disposal.

† Articulate speech is mentioned here because so inextricably attached to the development of the moral nature.

* "Nat. Schöpfung," p. 652.

† "Critiques and Addresses," p. 289.

‡ "Data of Ethics," Pref. p. iv.

should be left wrecked, compassless, and rudderless, on the dark ocean of doubt and perplexity, he, as ever ready with help and counsel, has departed in some measure from the prearranged order of his revelations, hastening to accomplish the "secularization of morals," a need which "is becoming imperative." For, he says, "few things can happen more disastrous than the decay and death of a regulative system no longer fit, before another and fitter regulative system has grown up to replace it."* This want is supplied; the danger is passed, and we breathe again, though lost in wonder as to what might have become of us and of the world generally if this happy thought had not struck the author.

There is an extreme simplicity and directness of purpose about this theory of latter-day morals which is ushered in with so much pomp and circumstance. *Conduct* is synonymous with "morals;" and conduct is primarily divided into actions that have a purpose and those that are "purposeless;" for instance, "such actions as those of an epileptic in a fit are not included in our idea of conduct."† Action, with a purpose or conduct, then, is defined as being good or bad, according as it is "well or ill adapted to achieve prescribed ends" (p. 21). A *good* knife is one that cuts well; a *good* gun one that carries far and true. "Conversely, the badness alleged of the umbrella or the pair of boots refers to their failures in fulfilling" certain ends. A *good* jump is one that achieves its purpose, and a *good* stroke of billiards is one where "the movements are skilfully adjusted to the requirements" (p. 22). On the other hand, a shuffling walk and an indistinct utterance are *bad*, "because of their relative non-adaptations of the acts to the ends." And, in like manner, ethically, all conduct is *good* which is well adapted to the effecting of a certain end, which is primarily "the general end of self-preservation" (p. 23). This is further defined (p. 14) as "that increased duration of life which constitutes the *supreme end*."

But it appears by and by that there is a more accurate primary meaning of the

words *good* and *bad*. We call good and bad "the things which immediately produce agreeable and disagreeable sensations"—and remembering this and some other allied considerations, it "becomes undeniable that, taking into account immediate and remote effects on all persons, the good is universally the pleasurable" (p. 30).

Beyond the immediate personal pleasure and extension of life, which is the "supreme end" of all our adapted actions—beyond this "egoism" there is an "altruism" to which the egoism must to a certain extent be made subordinate. "In maintaining their own lives and fostering their offspring, men's adjustments of acts to ends are so apt to hinder the kindred adjustments of other men that insistence on the needful limitations has to be perpetual, and the mischiefs caused by men's interferences with one another's life-sub-serving actions are so great that the interdicts have to be peremptory" (p. 24). All of which, when put into plain language, appears to mean that a life of action, or conduct, or morals, founded upon the pursuit of the "good," which is "universally the pleasurable," would run great risks of being prematurely cut short by an unappreciative community.

These varying interests are discussed largely, but without making it clear that we have any direct and immediate rule of conduct except the pursuit of pleasure and the avoidance of pain. That we have any intuitive sense of right and wrong as such is a supposition too contemptible to be treated seriously. Our moral faculties are no divine endowment, but they have resulted, in accordance with the laws of Evolution, "from inherited modifications caused by accumulated experiences" (p. 55). And ever and again the refrain recurs, that the pleasurable is the good and the painful is the bad.

Thus we arrive at the satisfactory conclusion that whatever is pleasant is *right*, and whatever is unpleasant or painful is *wrong*; and except in so far as we may be inclined to accept certain tribal conventions we have no other guide to rectitude of conduct.

It seems somewhat unfair, if not absolutely cruel, to attempt to bring Mr. Herbert Spencer's theories to the test of

* "Data of Ethics," Pref. p. lv.

† *Op. cit.*, p. 5.

any practical application. His Constructive Philosophy is so evidently adapted to and derived from the contemplation of an ideal world of his own construction, and his physiology is so very remote from that with which physiologists are familiar that it is difficult to find any common ground on which to meet him. It seems also almost a pity to disturb the simple harmony of his arrangements by any comparison of them with the exigencies of a real world. Nevertheless, in consideration of that large class of readers who are addicted to supposing that they are instructed when they are only mystified, I will endeavor to follow out one or two of his arguments to their logical termination, after having explained what I mean by the difference between Mr. Herbert Spencer's physiology and that held by scientific men generally.

In another place* I have called attention to the extraordinary statement that "a faculty on which circumstances make *excessive demands* increases"—a position directly at variance with the experience of medical men and physiologists, who find uniformly that the eye, the ear, the heart, and the brain (not to allude to even more obvious and striking illustrations) all improve in function *only* so long as *moderately* exercised; and all *fail* when "*excessive demands*" are made upon them. A companion idea to this, and one equally at variance with the most elementary principles of physiology, is found in the "Data of Ethics;"† in fact it may be said to constitute the physiological basis of the entire work; as, were this proved to be incorrect, the entire argument would fall to the ground for lack of any support. It is to the effect that "it is demonstrable that there exists a primordial connection between pleasure-giving acts and contrivance or increase of life, and, by implication, between pain-giving acts and decrease or loss of life." And again, at p. 87, it is stated that "every pleasure increases vitality; every pain decreases vitality; every pleasure raises the tide of life; every pain lowers the tide of life."

To enunciate this proposition in plain terms is almost equivalent to disproving it. For it necessarily follows, if this be

true, that nothing is so beneficial to life and humanity as perpetual and unbounded sensual indulgence, along with the practice of all those exciting pursuits that may be summed up under the generic term "gambling." Naturally Mr. Spencer has not entirely overlooked this objection to his views, and has, equally naturally, discussed it copiously, but apparently without finding it necessary or practicable materially to modify his position; for after each excursion after an apparent objection he returns to a more and more decisive enunciation of the same view, that is so clearly expressed at p. 99—viz., that "along with complete adjustment of humanity to the social state will go recognition of the truths, that actions are completely right only when, besides being conducive to future happiness, special and general, they are *immediately pleasurable*; and that painfulness, *not only ultimate but proximate*, is the concomitant of actions that are *wrong*."*

By way of testing this doctrine, let us suppose a case, occurring after this "complete adjustment" has been effected—an adjustment, it may be presumed, which does not necessarily imply the possession of universal knowledge and skill in every department of science in each and every individual. I suppose, then, that my friend C. has a valuable collection of scientific instruments, to which I and others have occasional uncontrolled access. On one of these occasions, as a result of my own ignorance and incapacity, I do a great amount of damage to the apparatus, which will cost (say) £1000 to remedy. I assume also that no one is present—and as is perfectly conceivable, that the circumstances are such that I could not possibly be found out, if I kept my own counsel—that the damage might be attributed, in short, to the intrusion of a dog or the occurrence of a convenient thunder-storm.

Assuming all this, in which there is nothing impossible or inadmissible, I proceed to ask myself what it is my *duty* to do (if such a thing as *duty* can be supposed to exist under modern enlightenment as opposed to *expediency*), and I argue thus: The old law

* "Winds of Doctrine," p. 107.

† P. 82.

* The italics are not in the text.

of conscience, represented by such rules as "Thou shalt," or "Thou shalt not," "Do unto others," etc., and the like, would make my way plain enough. I *must* make prompt confession and restitution, or restoration. But this is certainly unpleasant. Have I not heard something of a new basis of morals—"another and fitter regulative system?"* Let me see what guide this will afford me. I find that actions to be "completely right" must be "*immediately* pleasurable," and that "painfulness" will indicate that they are "*wrong*." Now I wish to be *completely right*, therefore I must do what is immediately pleasurable, and avoid what is painful. It is certainly neither immediately nor remotely *pleasurable* to confess my awkwardness and incapacity; and it is as certainly *painful* to pay £1000 unnecessarily. Therefore I shall keep my own secret—let the dog bear the blame, and bless Mr. Herbert Spencer and the doctrine of Evolutionary morals. If there be anything more deducible from the new "regulative system" than this, it certainly is so far below the surface as to be undiscernible by ordinary mental vision. And should it appear to any one that this is a trivial and casuistic mode of testing a great broad principle, I would suggest that it is at least as much to the purpose as Mr. Spencer's own speculations on the more favorable views we should take of "pocket-picking," on the supposition that "picking a man's pocket excited in him joyful emotion."†

My next illustration, however, shall be of the author's own selection; and I will only so far modify it as to take the *whole* of the case proposed, instead of a *part* only. By way of illustrating the essential connection between what is *pleasant* and what is *right*, Mr. Spencer, at p. 261 of the "Data of Ethics," asks us to consider the relation of a healthy mother to a healthy infant:

"Between the two there exists a mutual dependence which is a source of pleasure to both. In yielding its natural food to the child the mother receives gratification; and to the child there comes the satisfaction of appetite—a satisfaction which accompanies furtherance of life, growth, and increasing enjoyment. Let the relation be suspended, and

on both sides there is suffering. The mother experiences both bodily pain and mental pain; and the painful sensation borne by the child brings as its results physical mischief and some damage to the emotional nature. Thus the act is one that is to both exclusively pleasurable, while abstention entails pain on both; and it is *consequently* of the kind we here call absolutely right."

If this reasoning be of any cogency, it must of necessity bear application to the entire case. Therefore, when the period arrives when this relation must be suspended, and when we find, as is almost constantly the case in our *real* world, that this "abstention entails pain on both" mother and child, we are certainly justified in supposing conversely, that the act of weaning is "*consequently* of the kind we here call absolutely" *wrong*!

It is scarcely necessary to pursue this subject further. There is certainly much *philosophy* afloat, which, if freed from nebulosity and translated into the vernacular, might easily be mistaken for what is often called by a very different name. There are certain geometrical propositions which it is not the custom to demonstrate directly, but their truth is proved by showing the absurdity of the contrary supposition. This service has been abundantly rendered to the theories of Creation and Intuition by Mr. Huxley, Mr. Herbert Spencer, and Professor Haeckel, by the demonstrations that they have given of the inextricable maze of contradictions, futilities, and impossibilities into which we are led by attempting to follow the guidance of the "only alternative" doctrine—that of Evolution.

I would conclude with an old syllogism:

"Without *verification*, a theoretic conception is a mere figment of the intellect."*

The theory of Organic Evolution is an unverified theoretic conception.†

Therefore, ORGANIC EVOLUTION IS A MERE FIGMENT OF THE INTELLECT.—*Contemporary Review*.

* Prof. Tyndall's "Fragments of Science," p. 469.

† Inasmuch as the "only" recognized proof has not been furnished—viz., that arising from "observation and experiment on existing forms of life," and no other even plausible one has been offered.

* "Data of Ethics," Pref. p. iv.

† *Ibid.*

MOROCCO AND THE MOORS.

ONE of the most impressive views in Southern Europe is that commanded from the heights behind San Roque, looking over the Straits of Gibraltar to Africa. To our mind, in point of picturesque beauty it surpasses the softer charms of the Bosphorus, seen in the ride along the ridge from the valley of the Sweet Waters to Pera; or even the sweep of sea and coast, backed up by the Apennines, that is embraced from the unrivalled amphitheatre of Taormina. Beneath and before you, shaped roughly by nature from the rugged gray limestone, lies the slumbering lion of the Gebel Tarik, whose teeth are rifled guns from the Woolwich factories, set up by way of jaws in the galleries that mine the Rock. Beyond are the blue waters of the Narrows, that are running in a swift current between the Pillars of Hercules, flecked by the white breakers that are lashed up by a freshening breeze; and beyond that again are the hills of the Riff mountaineers, spur after spur and range upon range, rising to the snow-capped crests of the Atlas. The air is so clear of a bright spring morning that they say you can see the flash of the sunrise on the bayonets when the Spanish garrison parades at their settlement of Ceuta. At all events, the lie of the African landscape seems brought in such vivid proximity to the traveller that his fancy has little difficulty in filling in imaginary details. The actual glories of the magnificent scene are so striking that we well remember forgetting hunger and fatigue, and pulling up the horses in speechless admiration, though, after being weather-bound for two days and nights by a flooded stream in a ferryman's hovel, we had been pushing sulkily ahead to breakfast in Macre's comfortable inn at San Roque. And we remember, too, so far as our personal experience went, that even more fascinating than the grandeur of the view was its suggestiveness. The land you looked across to was almost a *terra incognita*—a land of myths and marvels, and guarded jealously by dragons in the shape of dangers. Here we were in old Europe, no great number of days' steaming from Southampton by the admirably appointed steamers of the P.

and O.; we were within sight and reach of Algesiras, with its theatre and bull-ring, and all the visible signs of the advanced Spanish civilization; we were almost within scent of the British pipeclay at Gibraltar, and sound of the good old English expletives echoing in the sanded parlors of public-houses, where they sell adulterated Bass in frothing tankards. And there, on that opposite shore, under the constellation of the Crescent, and within what looked like long gun-range, was a country where travel was out of the question, unless you went about escorted by something like an army corps. For be it remembered that the writs of the Sultan of Morocco do not run in the hills that are the fastnesses of those Riff robbers; and that, should a merry yachting party from our garrison be driven by stress of weather on their shore, the members of it will be infallibly stripped, and almost as certainly murdered.

Even elsewhere in the realms that are more amenable to his Moorish majesty you can only move about under his special protection, except in the semi-European town of Tangiers, and in Tetuan, and one or two of the seaports on the Atlantic. At Tangiers the prosaic and the romantic rub shoulders, while Christian and Moslem, Jew and Pagan are promiscuously confounded in a motley mob. There is no sort of difficulty in getting to it. The boats that bring the cattle that victual the Rock ply regularly, wind and weather permitting; for Tangiers is an open and pierless roadstead, though tolerably protected from the prevalent gales. "Rock scorpions," who dabble in the contraband trade, make frequent visits thither for business or pleasure, and soldiers from the Rock knock up shooting expeditions. You find yourself seated at the French *tables d'hôte* in the hotels in a mixed company of confused speech and queerly-crossed nationalities, whose talk is of dollars, and quail, and bullocks, and wild boar, and lucky ventures, and rascally officials. But beyond the walls, within which the natives scowl at you, the range of your tether is extremely short. There is a fashionable prome-

nade along the beach, where, by way of relief from the overpowering odors of the refuse that incumbers the narrow streets, you inhale the mingled fragrance of the breezes from the Atlantic and the seaweed and the bodies of the animals that lie strewn along the water-line. Or you may be sent out shooting within a limited range, in the shadow of the consulates, under the guard of a Moorish man-at-arms whom it would be mockery to call a soldier. If you do anything more, or should you go abroad unprotected, you do it at your proper peril. It is possible that you may come back unscathed; for the governor being under the thumbs of the foreign representatives, his subjects have a wholesome terror of retribution for any outrage on the Christian dogs. It is probable, on the other hand, that a sudden impulse of malignity, or the hope of making a snatch at booty with impunity, might result in a deed of robbery and murder. Be that as it may, anywhere else in the interior the life of the stranger, except he were a black from the Soudan, would never be worth an hour's purchase—unless, indeed, he were passed on from governor to governor in armed state, as the guest of the emperor; or unless he stole through the country in Moslem disguise, professing the faith of the fanatics about him.

It is fanaticism that makes Morocco inaccessible—fanaticism, and partly, perhaps, the lingering traditions of the wars between the Spanish Moors and the Christians. The Moors who were beggared and expelled by Ferdinand and Isabella from the land they had conquered and turned into a garden—the Moriscoes who were persecuted, maddened, proscribed, and banished by the truculent bigotry of Philip the Second—are said to have carried the keys of their Spanish houses with them and bequeathed them to their posterity with a legacy of hate. It is said, too, that those keys are treasured still against that return of the Moors to Europe which for long was a living article of belief with them. It is probable that, as matter of fact, they have renounced all ideas of the kind; it is certain that the great mass of the nation must be as ignorant of their own history as of everything else. Still, and all the more be-

cause of the crossing with the Berber strain, they come of a race which are known to be inveterate haters; and vague impressions of ancient wrongs may deepen their pious detestation of the Christian. There are other countries, no doubt, that fanaticism seals to the stranger, although the number is steadily diminishing before the advances of commercial enterprise. You may ride through the length and breadth of Japan without the risk of being hacked to pieces by the retainers of the daimios, as would have been a matter of course no great number of years ago. You may venture under Russian protection into the Tartar Khanates, which are infamous in the records of the geographical societies for their associations with the martyrs of travel. But in Thibet, for example, and the remoter provinces of the Celestial Empire, the provisions on foreign intrusion still subsist in full force, and you have always the fear before your eyes of being subject to all the refinements of torture that those ingenious orientals have perfected into a fine art; while in New Guinea and some of the island groups in the South Seas you might be served as the *pièce de résistance* at a grand cannibal feast. All that is in accordance with immemorial custom and the spirit of constitutions that have been sanctified by time; but the case of the Moors is altogether different. Low as they have fallen in the course of centuries, in their isolation and the fungus-growth of their ignorance and prejudices, they are the lineal descendants of a chivalrous race who were far in advance of the Christians around them. There they are living on the immediate confines of the happy community of European nations, who, though they may settle differences by fighting from time to time, have subscribed nevertheless to international understandings. There seems to be no obvious reason, on the face of things, why Morocco should not be as amenable to the benevolent influences of the rival commercial powers as any other of the states of Africa, from Tunis or Egypt down to Zanzibar. It lies under the guns of Gibraltar and Ceuta; it is exposed along the length of an extended seaboard, where cruisers coming to anchor in favorable weather might knock the miserable ram-

parts of mud about the ears of defenders who have a horror of cannon. It "marches" with the French military colony of Algeria on the one side, while at the opposite corner its lighthouse on Cape Spartel, tended probably by a trio of retired British quartermasters, is the landmark for the fleets of European shipping that follow the South African trade-routes. It has no strength for organized resistance, were it assailed or resolutely carried. The Sultan's irregular cavalry is irregular indeed, and his infantry is a mixed mob of tatterdemalions. But international jealousies assure the neutrality of the country and the sanctity of its abuses; and though our able English minister has much to say with the Sultan, it is as well perhaps that—thanks to his residence being at Tangiers—he may appear to close his eyes to the atrocities it would be altogether beyond his power to prevent.

The story of Blue-beard's secret chamber is always repeating itself, being founded on what Sam Slick used to call "considerable knowledge of human nature;" and the backwardness and barbarous seclusion of the Moors are incentives to the explorations which are so seldom practicable. In the early immigrations of the fugitive Spanish Moslems they carried with them the arts and the sciences which had made the glory of the court of the caliphs of Cordova. They have left their monuments behind them in Spain, in the marvellous architecture of their Alhambra and Alcazars, in their Giraldas and in mosques converted into cathedrals, where the worshippers thread their way through forests of columns in an infinite variety of exquisite designs. And they found their kinsfolk who gave them a welcome into Africa scarcely behind them in learning or in the luxuries of architecture. There are mosques in Fez and Morocco at the present day which certainly date from the fourteenth century, and which are believed to be in no degree inferior to that of Cordova, though no Christian is permitted to pass the portals. So there is a lingering romance about the name of Moor, though much of it vanishes on more intimate acquaintance. Even when visitors are received with the outward pomp of hospitality, the sense of danger is always present, and the gro-

tesque comedy of their every-day life may turn at any moment to a tragedy. You make your entry guarded by soldiers, through scowling and sullen mobs, under gates adorned by the heads of victims who have been summarily executed. The horsemen who are told off for your escort would willingly shed your blood and cast lots for your property were they not restrained by peremptory orders. The palace in which you may be housed is secured by a guard of honor; but it is only under the rose that you are permitted to show yourself on the roof, which commands a view of the domestic arrangements of your neighbors. For the terraces are set apart for the use of the ladies, and the unhalloved gaze of the infidel guests might sully the purity of the lights of the harem should it fall on their unveiled figures. The dignitaries who received you with stately courtesy are perhaps the most accomplished hypocrites on the face of the globe. With the pride of the place to which accident has elevated them, they are as bigoted as the lowest of their townfolk, whom they may order to summary execution. What would be gratuitously horrible crimes, according to European ideas, are the unconsidered actions of every-day routine with them, and nothing can be more deceptive than external appearances. The most prepossessing of countenances in its serene self-assurance of dignity may be merely the mask which covers exceptional refinements of cruelty. By the way, we have a very striking illustration of that in the interesting volume which Messrs. Hooker and Ball published on "Morocco and the Great Atlas." They had been most favorably impressed by the Governor of Shedna: even Sir Joseph Hooker, who had been taught by experience a well-founded distrust of oriental plausibility, had been greatly taken by that noble old man. He was "of venerable aspect, with remarkably fine features, and his conversation displayed a happy union of dignity and frankness." The surprise was the greater when, in discussing him with our vice-counsel at Mogador, they learned that this seeming incarnation of respectability was in no way superior to his class. Only the year before his cordial reception of the English travellers he had poisoned a couple

of friends of the vice-consul's under specially infamous circumstances. And the manners and customs of the semi-barbarous Arabs who live in the *duars* or *tschars*—villages of canvas or of stone—are as picturesque as the wild scenery of the Atlas or of the oases scattered through the solitudes of the southern deserts, which are irrigated from the fountains that spring under their date-palms. Of course their hand is against every man—unless, indeed, the stranger comes to their tents under a guarantee they do not dare to disregard. Otherwise, even the rights of desert hospitality weigh lightly against the temptations of the most paltry booty. Gerhard Rohlfs learned that to his cost, when he had been entertained by an Arab sheik under circumstances of almost affectionate cordiality. In an evil hour he betrayed to his "friend and brother" his modest store of silver dollars. The sheik speeded the parting guest, sending him forward under the guidance of a trusty companion; and the German *savant* was awakened from his next bivouac in the wilderness to see his worthy host standing over him with a smoking matchlock in his hand. He was slashed and stabbed repeatedly, robbed, and left for dead; and yet a couple of peasants who found him, on the third day after that, tended him with the tenderness of the Good Samaritan. They bound up his wounds and lacerated limbs as best they could, and carried him to the poverty-stricken hovel of their sheik, who could not offer him even a change of clothes, but who stinted himself and his family of their scanty food while they nursed and stuffed him into convalescence.

Morocco is pre-eminently the country of contrasts, and its natives experience that even more strikingly than strangers. The negro slave from the Soudan, who has been bought for a dozen of dollars, may be liberated to be the minister of ministers and the *alter ego* of the Sultan; though more probably he may fall a victim to some caprice of his master, and die of his sufferings in a dungeon to which his servitude was paradise. The irresponsible governor of a province who disposes of his subjects and their property as he will knows that he is only a sponge to be squeezed sooner or later. The courteous invitation to pay

a visit to the capital comes to him like the bowstring to the Turkish pasha; and if he does not prudently deprecate his doom by the absolute surrender of his ill-gotten gains, in place of being received in the audience-hall of the palace he will be consigned to the tender mercies of the tormentors. We can have no more striking proof of the strength of the lust for power and the love of money than the way in which these men will intrigue for office and commit atrocities for the wealth which so rarely profits them. As for the Jew, he lives and grows rich in Morocco on the terms of an even more precarious toleration than those under which he practised his usury among the European chivalry of crusading times. Not a few of the peculiar people are known to have amassed considerable fortunes, and possibly immense wealth. Although oppressed, and from time to time outraged and plundered, yet, in consideration of their usefulness as the brokers of commerce, they seem seldom to be absolutely stripped, like the governors who stand immeasurably above them. But they are not only confined like lepers to their quarters, as was the practice in some of the chief cities of Italy till the other day, but they dare only go abroad on their business in the meanest clothing. Their women, though often gorgeously dressed in their homes, hide the jewellery they cannot resist carrying about them in the bosoms of their dresses; and when one liberal-minded Sultan permitted the men to wear slippers in the streets the populace nullified the concession by a series of murders. With all classes beneath the great officials, domestic comfort conceals itself within the most unpromising exterior. So soon as a man is getting into easy circumstances he begins to make greater parade of poverty; ostentatious magnificence is set off by surroundings of almost inconceivable filth and squalor; offensive uncleanness and unwholesome diet counteract the influences of this magnificent climate and the admirable hygienic teaching of Mohammedanism. The dignitaries who inherit sanctity as their birthright are sensualists and semi-sceptics on the sly, the popular saints are lunatics and idiots, and the character of the people changes with each district and its mode of government,

while in the absence of either law or justice there is nothing but military terror to keep the population in check.

There are three ways by which recent travellers have been able to penetrate into the interior of this remarkable country. The first, by going as private individuals, but on the recommendation of the agents of one of the great powers, and in a pseudo-official character. The second, by declaring themselves proselytes to Mohammedanism, and adopting the habits and dress of the natives. The third, by attaching themselves to one of the special embassies which of late years have been occasionally accredited to the Sultan. The first is undoubtedly the least satisfactory, both for the travellers themselves and for those who read their books. It is true that the late Dr. Leared and Sir Joseph Hooker and Dr. Ball have written interesting volumes abounding in valuable information. That, men of intelligence and observation, gifted, moreover, with literary skill, could hardly fail to do. But at every turn you feel that they were hampered by the restrictions imposed by dislike and suspicion. Thus, Sir Joseph Hooker and his companions obtained from the Emperor an authorization to travel through the intervention of our Foreign Office. Our influential envoy, Sir Drummond Hay, did everything in his power to forward their views. But the English minister could not accompany them in person; and as they were merely protected by documents in place of the visible pomp and circumstance of strong military escorts, the local authorities, though civil, were passively obstructive almost everywhere. Even the officers in command of the handful of soldiers in attendance did their utmost to balk their employers' wishes. In the city of Morocco itself, at the instigation of the chief civil and military authorities, they were cavalierly treated and poorly housed, till they took the resolute tone which imposes on orientals, and made use of the name of her Britannic Majesty. The fact being that, until firmness brought them to their bearings, the Moors felt they might show with comparative impunity the repugnance they felt to Christian intrusion; nor in the course of the travellers' journeys in the interior did they concede to them an inch more

than they could help. Moreover, the greater part of Messrs. Hooker and Ball's volume is devoted to the botanical researches which were the object of their expedition, and consequently is caviare to the general reader.

It is far otherwise with that of Gerhard Rohlfs; and his book, from the first page to the last, has all the fascination of a romance. He had no companion. He had no papers, except a scrap or two that compromised him, when on one occasion he was seized and searched, although at his start from Tangiers, and once afterward, he had the good fortune to obtain advice and assistance from Sir Drummond Hay. He had no money save the trifle he earned in the course of his peregrinations by his practice of medicine and rough-and-ready surgery. But he had any amount of enterprise, enthusiasm, and resolute determination, and he succeeded in passing several years in familiar intercourse with Moorish society, besides exploring those regions to the south of the Atlas which had seldom or never been visited by Europeans. Though Dr. Rohlfs was honored with the gold medal of the Royal Geographical Society—an honor his enterprise had well deserved—we fear we must add to his other qualifications for Moorish travel that of unscrupulousness. An unprotected Christian, as we have said, could not go beyond hearing of the guns on the batteries of Tangiers without being waylaid and robbed or murdered. Dr. Rohlfs followed the example of other daring European adventurers who have slipped through the religious barriers of Mohammedan countries by adopting the dress with the tenets of Islam. He made no pretence of being a born Mussulman; for in the first place he felt that his inexperience would betray him, and in the next place, when he first began his wanderings he knew barely a dozen words of the language. But in his character of renegade and converted Christian he was bound to show a double portion of fervor, completing his sentences, when at a loss to express himself, with those pious religious ejaculations that are *de rigueur*. Possibly the quick-witted and suspicious natives estimated his zeal for his new faith at its true value. More than once he nearly

attained, at the hands of a bigoted mob or by the sentence of fanatical judges, what would hardly in his case have been the honors of martyrdom. But from adventure to adventure, threading danger after danger, he made his way across the length and breadth of Morocco; and his adventures, marvellous as they were, bear the unmistakable stamp of veracity. They might make matter for the *Hadj* or pilgrimage of a German-Moorish Gil Blas, and are in themselves an epitome of the grotesque and perilous romance which makes a period of travel and residence among the Moors read like a story from the "Arabian Nights."

Honored after a fashion, and living in luxury to-day, he was a penniless and lonely wanderer on the morrow. Now he had a villa-palace assigned to himself at Fez, where the river, meandering along under the shade of the orange-groves, reminds one of the cool sylvan charms of the Genarilife at Granada, or of a *kiosque* in its gardens on the Tigris in the days of Haroun Al Raschid. Now he was trudging on foot in the train of a caravan, carrying a beggar's wallet slung to his shoulders, breaking his fast on a handful of dates with water, and claiming hospitality for the night from some villager. For a year or two he was the body physician and boon companion of the Grand Sherif, who is not only the greatest landowner in the empire, but who is the religious superior of the Sultan himself, and who covered the convert with the mantle of his own sanctity. Again, he was attached, by command of the Sultan, to the service of some powerful *kaid* or governor, and at one time he was in the household of the Sultan himself. In the course of unreserved conversation he listened to weighty secrets of state, any of which was a dangerous burden to carry. His medical knowledge introduced him into the harems, bringing him into contact with unveiled beauties who gladly welcomed his visits as distractions, and with whom he might very easily have been compromised. In administering his drugs he had the fear before his eyes of being suspected of poisoning should the case end fatally, and of being punished for the death he had failed to prevent. All the time indeed his life was as much in danger as when he was trav-

elling alone in the wild districts that are raided habitually by robber bands. A sudden caprice of his patron for the time, a story whispered against him by some envious companion, and he might have been sentenced, executed, and buried out of sight. Though habit and firm nerves may have helped him, the sense of that perpetual tension must have been terrible. Even when treated with most regard, he knew himself to be only a prisoner at large. An open application for leave to depart would probably have consigned him to a dungeon. And it is characteristic of his nerve and firm resolution that when, by dexterous and rather deceitful diplomacy, he did obtain permission to go beyond the reach of surveillance, he should have persevered in his intention of pressing on into the interior. When he arrived at one of the seaports on the western coast, and saw a squadron of merchant ships from Europe riding at their moorings in the roadstead, we should have fancied that he must have been irresistibly tempted to embark, leaving the land of violence and horrors behind him. That natural idea never appears to have occurred to him. Thoroughly appreciating the pleasure of civilized intercourse, and even the Christian luxuries of knives and forks, he declined the hospitable invitations of the English consul in the fear of being compromised by going under his roof. Deliberately turning his back on the door of retreat, though he had already done enough to make himself a reputation, he travelled south-eastward into the deserts that lie beyond the outskirts of even Moorish law. From Agadir he passed by Tarudant, over the range that may be called the Southern Anti-Atlas, to the Draa Oasis, which is the outpost and *entrepôt* of the extensive trade carried on with the negro states to the southward. From thence, turning northward to the oasis of Tafilet, famous for some of the finest date-palms in the world, he met with the suggestive adventure we have already alluded to, escaping from it with life by a miracle, though it left him grievously maimed. Then dragging himself north-eastward along the confines of the desert, he finally reached the French fortress of Géryville, where, with the remark that all his troubles were at an end, he tells us how

he revelled through a confinement of many weeks in the comparative luxuries of the garrison hospital. And we may be sure that his Moorish patrons of the towns would not have left him to the chances of being assassinated in the desert had they known that they had "a chiel amang them takin' notes," with the full intention of going home to print them.

Signor Edmondo de Amicis,* whose picturesquely written and beautifully illustrated volume suggested to us the idea of the present article, needed to make no pretence of concealing his literary intentions had the Moors cared to inquire into them. A publicist by profession, he obtained leave to attach himself to a mission from the King of Italy, as correspondent of an Italian newspaper. Travelling as he did, with every available comfort in extremely agreeable society, and in all imaginable security, we fancy that few men could have been better fitted for the task. Starting in Gerhard Rohlfs's circumstances, if we are to believe himself, he would certainly have turned back on the road that led from Tangiers to Tetuan, where Rohlfs's companion disappeared with the bundle containing all his worldly property, which he had kindly volunteered to carry. But Signor de Amicis is a humorist; and we suppose we must take what he says of himself *cum grano*. He tells us that he selected the mule he was to ride, more with regard to its peaceable demeanor than to its spirit, paces, or staying powers. He affects to experience nervous tremors when he is accidentally separated, for an hour or two, from the body of the caravan; and when his eye is caught by the streams of blood trickling down one of the gates of Fez he dare not raise his eyes to the newly-decapitated heads that indicated the latest act of "justice." But whether the Signor's timidity be real or assumed, we could desire no more lively companion; and possibly we may be indebted to the quickness of his sensibilities for the graphic freshness of his impressions. A couple of professional artists accompanied the expedition; but we take it

for granted, from the intimation on the title-page, that the clever illustrations are done by the author himself; and if that be the case we can compliment him as being as much a master of his pencil as of his pen. The picturesque varieties of the life and manners as of the scenery and architecture of such a country as Morocco can be best conveyed to us in telling sketches. We can follow the course of the author's journey, and realize the sights that surprised and entertained him during his city residence, by running the eye rapidly over his pages. We have types of the various nationalities that make up the mixed population, with the quaint and impressive characteristics of their graceful garb. There are the wealthy Moors in all the pomp of their flowing *haiks* and voluminous turbans—rank impostors they must be, according to all accounts, with their airs of false benevolence and dignity, though not a few of them, in their thick lips and flattened noses, show the unmistakable signs of the slave-blood in their veins. There are the Jews, with keen, intelligent features, but with the obsequious bend in their stooping shoulders imposed on them by long centuries of oppression. Then comes a group of the savage mountaineers of the Riff coast, with sullen scowl and truculent bearing, carrying long matchlocks on their shoulders in cases of scarlet leather. True to their prowling habits in their native hills, they always, as we are informed, move about in small parties, making no secret of the sentiments with which they regard the stranger. There are troops of the wild horsemen from the country districts, dashing about on their fiery undersized steeds in games of mimic warfare. There is the caravan, with its horses, mules, and camels, and a straggling train of luggage-men on foot, winding its weary way across the burning desert. There is the rickety ferry-boat, newly calked up with clay for the passage, that is to transport its freight of men and heavily-laden animals across the stream of some rapid river. On one page we have an illustration of the primitive system of agriculture—a pair of draught-oxen, or a goat yoked with a donkey to a "plough" that scratches the surface of the soil; on the opposite one, "the punishment of the bastinado,"

* Morocco: its People and Places. By Edmondo de Amicis. Translated by C. Rollin-Tilton. Cassell, Petter, Galpin & Co., London.

unpleasantly suggestive of the sufferings of the victim and of the sublime indifference of the stalwart executioners. And by way of a change to softer or more sensational scenes, we have a group of the beauties in some aristocratic harem, where the flowers have been culled from a variety of climates; or glimpses into the interior of such shady courtyards as the *patios* of Seville or Cordova have been modelled after; or imposing pieces of municipal architecture, like that magnificent gateway at Mequinez, which seems to have been toned down rather than injured by time, though it must have been executed by the best art of the middle ages.

Signor de Amicis naturally prefaces his narrative by an account of the country and the people among whom he was to travel; and as his sketch is brief and comprehensive, we can hardly do better than quote it:

"This country—shut in by the Mediterranean, Algeria, the Desert of Sahara, and the ocean; crossed by the great chain of the Atlas; bathed by wide rivers, opening into immense plains; with every variety of climate; endowed with inestimable riches in all the three kingdoms of nature; destined by its position to be the great commercial high-road between Europe and Central Asia—is now occupied by about 8,000,000 of inhabitants—Berbers, Moors, Arabs, Jews, Negroes, and Europeans—sprinkled over a more vast extent of country than that of France. The Berbers, who form the basis of the indigenous population—a savage, turbulent, and indomitable race—live in the inaccessible mountains of the Atlas in almost complete independence of the imperial authority. The Arabs, the conquering race, occupy the plains—a nomadic and pastoral people, not entirely degenerated from their ancient haughty character. The Moors, corrupted and crossed by Arab blood, are in great part descended from the Moors of Spain, and, inhabiting the cities, hold in their hands the wealth, trade, and commerce of the country. The blacks, about 500,000, originally from the Soudan, are generally servants, laborers, and soldiers. The Jews, almost equal in number to the blacks, descend, for the most part, from those who were exiled from Europe in the middle ages, and are oppressed, hated, degraded, and persecuted here more than in any other country in the world. They exercise various arts and trades, and in a thousand ways display the ingenuity, pliability, and tenacity of their race, finding in the possession of money torn from their oppressors a recompense for all their woes. The Europeans, whom Mussulman intolerance has, little by little, driven from the interior of the empire toward the coast, number less than 2000 in all Morocco, the greater

part inhabiting Tangiers, and living under the protection of the consular flags."

The present Sultan is by no means illiberal in his ideas, if we may take his language for the expression of his thoughts. He explained, in the audience he granted to the Italian envoy, that he was quite disposed to move with the times, though unfortunately it was impossible that he should move quickly; nor could anybody who had the opportunity of making acquaintance with his subjects refuse to admit the validity of the excuse. Notwithstanding that, we can easily believe that he shares his subjects' disinclination to the intrusion of foreigners; and the more enlightened the ruler may be the less can he like inquiries into the eccentricities of his maladministration. It must be admitted, however, that when he consents to receive a guest he does not do things by halves. According to popular renown he is immensely wealthy; and both Rohlfs and de Amicis listened to marvellous accounts of the amounts of coin stored away in the cellars of his treasure-house at Mequinez. The Italian gentlemen were informed, in a hushed voice and with mysterious gestures, that it contained five hundred millions of francs; that they were stored in a palace within a palace, lighted only from the roof, and approached by vaulted passages strongly defended by grated doors; that the subterranean treasury is beneath a grand central hall; that three hundred negroes, four times in the year, shovel in the gold and silver sent by the Sultan; and that those slaves who are intrusted with the dangerous secrets are kept close prisoners in the palace. Once ordered within its fatal gates, they never pass them again till carried out for burial. Some part of the legend is no doubt true; but it is a natural enough notion of the superstitious Moors to put their treasure under the care of restless spirits by condemning its guardians to imprisonment and death. The buccaneers did precisely the same thing when they concealed their booty on the "keys" of the Spanish main. In spite of the expenses of recent wars and the lavish prodigality of some of his predecessors, the present Sultan is believed to be rich; and, rich as he is, he can afford to be liberal in his hospitality, since his

manner of practising it costs him comparatively little. He furnished the animals, the escort, and the tent-equipment for the train of the envoy, and all was on the most sumptuous and liberal scale. There were forty-five horses and upward of seventy mules—all the animals intended for riders being well appointed and caparisoned. There were tents and pavilions of all dimensions, some of them large enough to contain twenty persons—all of them from the private establishment of his Moorish Majesty, who is in the habit of shifting his residence among the three capitals, attended by hundreds of his wives and concubines. There was a guard of his Majesty's regular soldiers under the command of one of his generals. Yet, from the first, in all that appearance of generosity the stranger could detect symptoms of the abuses of a shabbily-managed administration. Most of the horses were in wretched condition, for the miserably-paid grooms in charge of them had converted the best part of the forage into cash. The special and permanent escort from the capital was slender, being swelled on the successive stages of the journey by a more numerous muster provided by each province, while the provisions, which were supplied in lavish profusion, were levied as a special tax on the country-people in the neighborhood of the successive halting-places.

The *mouna* or *muna*, like the *dustar* of the Turcomans of Central Asia, is one of the most characteristic features of Moorish travel. To do the Moors simple justice, the practice of hospitality is of universal observance among them. With the exception of the *fundas* or caravansers as in the cities, there are no places of public entertainment in the country; and a man claims to-day, as matter of right, the food and shelter he will offer to-morrow. So much, indeed, is that regarded as a right that, as Rohlf's tells us, if a guest considers himself shabbily treated he will have no hesitation in abusing his entertainer. But while an obscure wayfarer like Rohlf's sought his billets in the nearest house or hovel, the gentlemen who were travelling under the protection of the Emperor were received with very different ceremony. Even Messrs. Hooker and Ball, in the valleys of the Atlas,

though kept under unpleasantly strict surveillance, were supplied almost beyond the capacities of their attendants, who did their best to gorge themselves several times in the day. Moreover, such costly imported luxuries as French wax-candles and fine-flavored Pekoe were not unfrequently added for the use of the Englishmen. It may be imagined, then, on what a magnificent scale were the *munas* that were offered to the flying column of the great Italian embassy. On the first occasion the *muna* came as a surprise to them. The tents had been pitched in a barren valley, near a miserable hamlet of hovels built of stubble, and half hidden in the scrub of the prickly pear, when a soldier came running in to announce the *muna*, and forthwith it was introduced in a solemn procession. A long string of Arabs, followed by the hungry soldiers of the escort and the servants of the legation, defiled before the ambassador, depositing their burdens at his feet. These consisted of coal, eggs, sugar, butter, candles, bread, poultry, and eight sheep. Stuffing the guest, in oriental courtesy, is invariably a mark of extreme civility; and though the provincial dignitaries of Morocco seemed sometimes to push this vicarious hospitality to excess, yet probably they gauged by experience the illimitable voracity of their countrymen. On one occasion, after a most ample *muna*, a governor, conscious of some breach of courtesy to repair, sent a second immediately afterward on his own account. Yet we do not hear that there was any difficulty in disposing of it, although the camp must already have been crammed to satiety, and though it was certain that their next repast would be provided in the ordinary course.

The reliefs of the local escorts of cavalry were as regular as the appearance of the *muna*. The governor of the one province, or his deputy in command, saw the strangers nearly to the limits of his territory, when, sooner or later, over some rise in the rolling landscape, or emerging from a cloud of dust on the expanse of the sandy plain, appeared the fresh body of horsemen who were to take them over into charge. Doubtless there were reasons of prudence and policy for not bringing the mounted neigh-

bors face to face ; for the different districts, peopled by men of different races, are often at war ; raids and robberies are of constant occurrence, and standing blood-feuds must be not unfrequent. Here is the description of one of those imposing relays, when, turning the corner of a gloomy gorge and suddenly emerging into the sunshine, the caravan found itself in front of a striking spectacle : " Three hundred horsemen, dressed in all the colors of the rainbow, and scattered in a sort of grand disorder, came toward us at full speed, with their muskets held aloft, as if they were rushing to the assault. It was the escort from the province of Laracce, preceded by the governor and his officials, coming to relieve the escort of Had-el-Garbia." Wild-looking as all those bodies of horsemen were, they exhibited very different degrees of savagery, and varying shades of morality and respectability. In the country of such a tribe as the Beni-Hassan, for example, although the question, *quis custodiet custodes?* must have been perpetually presenting itself unpleasantly to the protected, it was the more necessary to be under the formal guardianship of the chief who answered for the behavior of his followers. " What kind of people are the Beni-Hassan ? " demanded De Amicis of the interpreter. " Thieves and murderers ; faces from the other world ; the worst crew in Morocco," was the far from reassuring answer. And naturally the Signor's curiosity was excited to the uttermost when they were expecting the arrival of their robber-escort.

" The faces from another world were not long in coming. We saw in advance a great cloud of dust, and in a few minutes were surrounded by a throng of three hundred mounted savages in green, yellow, white, violet, and scarlet, ragged, dishevelled, and panting, as if they had just come out of a fray. In the midst of the thick dust they raised we could discern their governor—a long-haired, black-bearded giant, who, followed by two hoary vice-governors, all armed with muskets, approached the ambassador, pressed his hand, and then disappeared. Immediately the usual firing, charging, and yelling began. They seemed frantic. They fired between the legs of our mules, over our heads, and close to our shoulders. Seen from a distance they must have looked like a band of assassins assailing us. They were formidable old men with long white beards, all skin and bone, but looking as if they might live for centuries,

and young men with long locks of black hair flying like manes. Many had their chests more or less bare, turbans in tatters, and red rags twisted round the head : *caïcs* torn, saddles broken, bridles made of cord, old sabres and poignards of strange forms. And such faces ! ' It is absurd,' said the commandant, ' to suppose that these people will be capable of the self sacrifice of not killing us.' Every one of these faces told a story of blood. They looked at us as they passed, out of the corners of their eyes, as if to hide the impression of their glance."

The manner and morals of this unpleasant people by no means belied their villainous looks. Theft is their avowed profession, and they take rank according to their dexterity in it. The boys are put in training from their most tender ages, and the youth are told off to particular departments, according to the capabilities they develop. They go to work like an organized gang of London burglars on circuits far beyond their immediate beat. They are in the habit of lying in wait in the towns to attack the Jews, who are compelled by law to go unarmed, and who are generally worth plundering. Like mounted Indians they go great distances on horseback to make sudden descents on unsuspecting *duars*. They will dismount, and, like some of the low-caste Hindoos, strip to the skin, soap themselves all over, and slip within the precincts of the village, for the dogs will not bark at a naked man. " They glide upon the ground like snakes, covered with grass, with straw, with leaves, dressed in sheepskins, disguised as beggars, as madmen, as saints, as soldiers. They will risk their lives for a chicken, and go ten miles for a dollar. They will even steal a bag of money from under the head of a sleeping man." In short, they are the very subjects for a thrilling local criminal romance in the *genre* of Mr. Harrison Ainsworth's " Jack Sheppard ; " and we have dwelt on their methods of proceeding at some length because they admirably illustrate the misrule of Morocco. They terrorize the surrounding country far and near, levying heavy contributions of blackmail on the villages that derive exemption from their depredations. It may be said, no doubt, that it is not so very long since gentlemen caterans like Rob Roy drove a flourishing business in Scotland. But at all events Rob Roy was proscribed and hunted down, and he

had his headquarters in the fastnesses of a remote Highland district, while those Moorish robbers thrive on their ill-gotten gains in a country open to the irregular cavalry, of which their Emperor has so many in his pay; and their bands infest the roads between the court and his capitals, which are habitually travelled by his caravans and treasure-trains.

Next to the savage bearing of so many of the inhabitants, what struck the embassy most on their inland march was the unpeopled and uncultivated condition of the country. Agriculture, as we have said, is still in its infancy there; or rather, perhaps, it may be said to have fallen back into its second childhood, since doubtless the Moorish farmers of the middle ages were more intelligent if not more industrious than their descendants. We hear of the long marches over broken ground, "covered with dwarf palms, broom, and wild plums and fennel;" through a succession of green valleys, monotonous in the sameness of their beauty, and whose banks were clothed with the aloe and wild olive. As the caravan rose and passed each successive ridge, so far as the eye could reach it rested on no sign of habitation. Occasionally they would come to a point where the scattered herds of cattle intimated that there must be some dwelling in the neighborhood. Again, as the track emerged from the labyrinths of a natural shrubbery, they would enter "on a vast plain, all covered with flowers, violet and yellow." That rough luxuriance of unreclaimed nature was interspersed, no doubt, with broad stretches of barren sand, on which, by the way, they suffered horribly from the heat on the return march from Fez in the month of June. But the general impression was that of immense natural wealth, rarely turned to profit and generally running to waste, and of a country that should make the fortunes of agriculturists and merchants, were it only blessed with a tolerable government.

The entomologist, too, might make himself happy there, if his enthusiasm rose superior to the weaknesses of the flesh; though it must be confessed that the locusts would be a scourge to the farming interest. As Signor de Amicis and his companions happened to have no taste in that way, they suffered and complain-

ed bitterly. Exhausted as they were with heat and hard riding, the anxiously expected noonday siesta too often became a matter of form. "Hardly had we stretched ourselves upon the ground when we were assaulted, tormented, stung upon every side, as if we had chosen a bed of nettles; caterpillars, spiders, monstrous ants, hornets, and grasshoppers, big, impudent, and determined, swarmed about us. . . . Close by them was a monstrous spider's web, spread over some bushes like a sheet hung out to dry." In other places they had warnings of the evils to come, in the ominous buzzing from the long grass. "The ants were moving in long black lines, beetles were in bunches, and grasshoppers were as thick as flies." It was impossible to secure the tents from the intrusion of monstrous spiders and lizards, and of centipedes half a foot long, while the ordinary domestic bug abounded, and was extraordinarily voracious. Snakes and scorpions were so common everywhere that it seems a marvel that no one of the party was bitten by them. As for the locusts, with their innumerable hordes, the account of their periodical visitations is appalling. One of the ambassador's attendants described them to the Signor with animated eloquence; and from what we gather in confirmation from prosaic Western authorities, it would be difficult for even an oriental to exaggerate their horrors. "A black cloud! You can hear the noise from afar off. They have their sultan, the Sultan Jeraad, who guides them. They cross roads and fields, houses, *duars*, and woods. The cloud grows and grows, and comes and comes, and eats and eats and eats, passes rivers, passes walls, passes fields; destroys grass, flowers, leaves, fruit, grain, bark of trees, and goes and goes." And what De Amicis asserts seems to be an ascertained fact—that the horrible effluvia from the myriads of the dead have been known on one occasion to breed contagious epidemics, and at least a terrible pestilence.

As the novelty of their sensations wore off, and the picturesque effects began to pall on them, the travellers wearied for the end of the tedious march, and looked wistfully for the sight of the minarets of the capital. But Fez lies low: the circuit of the castellated walls is in no way

striking; their first impressions of the interior were decidedly disenchanting, and were only confirmed on closer acquaintance. The existence of wealth and splendor may be surmised, but the signs of poverty and human degradation are more conspicuous; and the people, who took no pains to conceal their hate, were in appearance the reverse of prepossessing.

"The first impression is that of an immense city falling into decrepitude and slowly decaying. Tall houses, which seemed formed of houses piled one upon the other, all falling to pieces, cracked from roof to base, propped up on every side, with no opening save some loophole in the shape of a cross; long stretches of street, flanked by two high bare walls like the walls of a fortress; streets running up hill and down, incumbered with stones and the ruins of fallen buildings, twisting and turning at every thirty paces; every now and then a long curved passage, dark as a cellar, where you have to feel your way; blind alleys, recesses, dens full of bones, dead animals, heaps of putrid matter; the whole steeped in a dim and melancholy twilight. In some places the ground is so broken, the dust so thick, the smell so horrible, the flies are so numerous, that we have to stop to take breath."

But Morocco, as we observed already, is the country of contrasts, and these external appearances were to some extent deceptive. The embassy were agreeably surprised by the comfort of the quarters assigned to them; and the description of the interior of this palace gives a good idea of the residences of the wealthiest Moorish dignitaries.

"The house was a princely mansion in the purest Moorish style, with a small garden shaded by parallel rows of orange and lemon trees. From the garden you entered the interior court by a low door, and thence into a corridor large enough for only one person to pass. Around the court were twelve white pilasters, joined by as many arches of a horse-shoe form, which supported an arched gallery furnished with a wooden balustrade. The pavement of the court, gallery, and chambers was one splendid mosaic of little squares of enamel of brilliant colors; the arches were painted in arabesque, the balustrade carved in delicate open work; the whole building designed with a grace and harmony worthy of the architects of the Alhambra. In the middle of the court there was a fountain, and another one with three jets of water was in a carved and ornamented niche in the wall."

The laws that forbid the admission of Christians to the celebrated mosques of El-Caruin and Muley-Edris are not relaxed for the members of the Mission. Yet, looking in from the street through

the open doors, it could be seen that, though fallen from their high estate, they still retained much of their early magnificence. Meantime, while awaiting the presentation to the Emperor, the Italians were treated with all courtesy by his ministers. Chief of these, and the most remarkable, is Sid-Moussa, who speedily sent them an invitation to a breakfast of ceremony. His rise from the dregs of Central African society to the exercise of almost absolute power reads almost like a fairy tale, even in the East, and could hardly have been possible out of Morocco. Nor even in Morocco could he have climbed so high, and kept his place so long, had he not had extraordinary natural abilities. When he received the Mission he occupied much the same position there as Prince Bismarck in the new German Empire. His was the master-mind that governed the Sultan and his fellow-ministers, and which was supposed really to direct the policy of the state, so far as the central authority reaches. Yet Sid-Moussa was brought up as a slave, and could have had few of the advantages of even a Moorish education. His appearance, if De Amicis does not exaggerate his peculiarities, must have been as strange as his checkered career and his fortunes.

"A man of about sixty; a dark mulatto of middle height, with an immense oblong head, two fiery eyes of a most astute expression, a great flat nose, a monstrous mouth, two rows of big teeth, and an immeasurable chin; yet in spite of these hideous features, an affable smile, an expression of benignity, of voice and manners of the utmost courtesy."

The features and figure of the great minister, whose nearest kinsfolk were probably sweating under the stick in the rice-fields of their native Soudan, might have served as a foil to those of his autocratic master. The one might have passed for the hideous monster of fable set to guard the approaches to some enchanted beauty, the other for the incarnation of princely fascinations who was destined to break the charm. We can hardly help suspecting that Signor de Amicis has thrown in some touches for effect when we turn to his dazzling portrait of the Sultan. The day came when his Majesty deigned to receive the Mission, and a great surprise awaited them. They had figured to themselves a bloated

and truculent despot; they saw "the handsomest and most charming young fellow that had ever excited the fancy of an odalisque." He had soft eyes and delicately-cut features, with "a noble face, full of sadness and gentleness." Young, handsome, and light-hearted, it seemed an effort to him to preserve the gravity indispensable to an occasion so solemn; but they gathered an idea of his dignity and immeasurable power from the profound veneration of his subjects who encircled him. "He seemed not a monarch, but a god." And who can wonder that such a country is misgoverned when all depends on the character of an absolute despot, who is surrounded by slavish and venal counsellors, who is brought up to believe himself the sun of his system, and who can seldom hear the truth by any chance? Muley-el-Hassan must have been one of the most favorable specimens of his dynasty, yet Morocco was as miserably governed as ever. Nevertheless the omnipotent monarch was affable, and he entirely won the hearts of his guests.

As they passed the troops of his body-guard under inspection, the Italians had some opportunity of judging of his military power. It is certain that the Moors showed great bravery in their campaigns with the French and Spaniards, defending their positions with dogged determination in spite of the wretched inferiority of their weapons, and occasionally making desperate charges, in which they fell, with the ferocious courage of fanaticism. But it is probable that it was the more sturdy levies from the country districts who were the bone and sinew of the Moorish army. Nothing could be more ludicrously discreditable than the show of the regiments at Fez, though they may be supposed to have been the crack corps of the service; and Gerhard Rohlfs reports no better of them in his day. They were of all ages and sizes; some wore uniforms, and many were in rags; "they came from the desert, from the coast, and the mountains," while a large proportion of the rank and file were boys who looked like vicious street gamins.

Notwithstanding their eagerness to reach Fez, a little of that city went a long way with the Mission, and their lively curiosity was speedily sated. It was the

cooking, even more than their dread of the heat, on the return journey to Tangiers, that made them desire to hasten their departure. Rohlfs, who half denationalized himself, was far less particular; but more fastidious travellers, like Messrs. Hooker and Ball, pleaded guilty to precisely similar feelings. Everything was supplied to the Englishmen in superabundance, but they found no nourishment in the mutton and fowls, while the native "made-dishes" turned their stomachs. The succession of formal banquets, where they were forced to stuff and denied the wine that might have helped digestion, were terrible ordeals to the Italians. Here is the *menu* of Sid-Moussa's state breakfast, as given by Signor de Amicis, and with that we shall close our notice of his experiences and adventures in Morocco:

"We seated ourselves, and were served at once. Twenty-eight dishes, without counting the sweets! Twenty-eight immense dishes, every one of which would have been enough for twenty people, of all forms, odors, and flavors; monstrous pieces of mutton on the spit, chickens (with pomatum), game (with cold cream), fish (with cosmetics), livers, puddings, vegetables, eggs, salads, all with the same dreadful combinations, suggestive of the barber's shop; sweetmeats, every mouthful of which was enough to purge a man of any crime he had ever committed; and with all this, large glasses of water, into which we squeezed lemons that we had brought in our pockets; then a cup of tea, sweetened to syrup; and finally, an irruption of servants, who deluged the table, the walls, and ourselves with rose-water."

We should say, in fact, that travel in Morocco, notwithstanding the many objects of interest, is one of the things that are more enjoyable in the retrospect than in reality. But if it still pleases the Moors to keep strangers at arm's-length, it is satisfactory to reflect that the changes of time have put an end to the intercourse they used to force upon Europeans. One shudders to think of the fate of the Christians condemned to perpetual slavery with such a people, in the days when the famous Sallee rovers were the terror of all the neighboring coasts; and should the country ever accept the blessings of civilization, it is certain that the philanthropists will have their work cut out for them.--*Blackwood's Magazine*.

THE PINCH OF POVERTY.

BY JAMES PAYN.

IN these days of reduction of rents, or of total abstinence from rent-paying, it is, I am told, the correct thing to be "a little pressed for money." It is a sign of connection with the landed interest (like the banker's ejaculation in "Middlemarch") and suggests family acres, and entails, and a position in the county. (In which case I know a good many people who are landlords on a very extensive scale, and have made allowances for their tenants the generosity of which may be described as Quixotic.) But as a general rule, and in times less exceptionally hard, though Shakespeare tells us "How apt the poor are to be proud," they are not proud of being poor.

"Poverty," says the greatest of English divines, "is indeed despised and makes men contemptible; it exposes a man to the influences of evil persons, and leaves a man defenceless; it is always suspected; its stories are accounted lies, and all its counsels follies; it puts a man from all employment; it makes a man's discourses tedious and his society troublesome. This is the worst of it." Even so poverty seems pretty bad, but, begging Dr. Jeremy Taylor's pardon, what he has stated is by no means "the worst of it." To be in want of food at any time, and of firing in winter time, is ever so much worse than the inconveniences he enumerates; and to see those we love—delicate women and children perhaps—in want of them, is worse still. The fact is, the excellent bishop probably never knew what it was to go without his meals, but took them "reg'lar" (as Mrs. Gamp took her Brighton ale) as bishops generally do. Moreover, since his day, Luxury has so universally increased, and the value of Intelligence has become so well recognized (by the publishers), that even philosophers, who profess to despise such things, have plenty to eat, and good of its kind too. Hence it happens that, from all we hear to the contrary from the greatest thinkers, the deprivation of food is a small thing: indeed, as compared with the great spiritual struggles of noble minds,

and the doubts that beset them as to the supreme government of the universe, it seems hardly worth mentioning.

In old times, when folks were not so "cultured," starvation was thought more of. It is quite curious, indeed, to contrast the high-flying morality of the present day (when no one is permitted, either by Evolutionist or Ritualist, however dire may be his necessity, so much as to jar his conscience) with the shocking laxity of the Holy Scriptures. "Men do not despise a thief if he steal to satisfy his soul when he is hungry," says Solomon; after which stretch of charity, strange to say, he goes on to speak of marital infidelity in terms that, considering the number of wives he had himself, strike one as severe.

It is certain, indeed, that the sacred writers were apt to make great allowances for people with empty stomachs, and though I am well aware that the present profane ones think this very reprehensible, I venture to agree with the sacred writers. The sharpest tooth of poverty is felt, after all, in the bite of hunger. A very amusing and graphic writer once described his experience of a whole night passed in the streets; the exhaustion, the pain, the intolerable weariness of it, were set forth in a very striking manner; the sketch was called "The Key of the Street," and was thought by many, as Browning puts it, to be "the true Dickens." But what are even the pangs of sleeplessness and fatigue compared with those of want? Of course there have been fanatics who have fasted many days; but they have been supported by the prospect of spiritual reward. I confess I reserve my pity for those who have no such golden dreams, and who fast perforce. It is exceedingly difficult for mere worldlings—such as most of us are—not to eat, if it is possible, when we are hungry. I have known a great social philosopher who flattered himself that he was giving his sons an experience of High Thinking and Low Living by restricting their pocket-money to two shillings a day, out of which it was under-

stood they were to find their own meals. I don't know whether the spirit in their case was willing, but the flesh was decidedly weak, for one of them, on this very moderate allowance, used to contrive to always have a pint of dry champagne with his luncheon. The fact is, that of the iron grip of poverty, people in general, by no means excepting those who have written about it, have had very little experience; whereas of the pinch of it a good many people know something. It is the object of this paper—and the question should be an interesting one, considering how much it is talked about—to inquire briefly where it lies.

It is quite extraordinary how very various are the opinions entertained on this point, and, before sifting them, one must be careful in the first place to eliminate from our inquiry the cases of that considerable class of persons who pinch themselves. For, however severely they do it, they may stop when they like and the pain is cured. There is all the difference in the world between pulling one's own tooth out, and even the best and kindest of dentists doing it for one. How gingerly one goes to work, and how often it strikes one that the tooth is a good tooth, that it has been a fast friend to us for ever so many years and never "fallen out" before, and that after all it had better stop where it is!

To the truly benevolent mind, indeed, nothing is more satisfactory than to hear of a miser denying himself the necessities of life a little too far and ridding us of his presence altogether. Our confidence in the average virtue of humanity assures us that his place will be supplied by a better man. The details of his penurious habits, the comfortless room, the scanty bedding, the cheese-rinds on his table, and the fat banking-book under his thin bolster, only inspire disgust; if he were pinched to death he did it himself, and so much the better for the world in general and his heir in particular.

Again, the people who have a thousand a year, and who try to persuade the world that they have two thousand, suffer a good deal of inconvenience, but it can't be called the pinch of poverty. They may put limits to their washing-bills, which persons of cleaner habits would consider unpleasantly narrow;

they may eat cold mutton in private for five days a week in order to eat turtle and venison in public (and with the air of eating them every day) on the sixth; and they may immure themselves in their back rooms in London throughout the autumn in order to persuade folks that they are still at Trouville, where for ten days they did really reside and in splendor; but all their stint and self-incarceration, so far from awakening pity, only fill us with contempt. I am afraid that even the complaining tones of our City friend who tells us that in consequence of "the present unsettled state of the markets" he has been obliged to make "great retrenchments"—which it seems on inquiry consist in putting down one of his carriages and keeping three horses instead of six—fail to draw the sympathizing tear. Indeed, to a poor man this pretence of suffering on the part of the rich is perhaps even more offensive than their boasts of their prosperity.

On the other hand, when the rich become really poor their case is hard indeed; though, strange to say, we hear little of it. It is like drowning; there is a feeble cry, a little ineffectual assistance from the bystanders, and then they go under. It is not a question of pinch with *them*; they have fallen into the gaping mouth of ruin, and it has devoured them. If we ever see them again, it is in the second generation as waiters (upon Providence), or governesses, and we say "Why, dear me, that was Bullion's son (or daughter), wasn't it?" using the past tense as if they were dead. "I remember him when he lived in Eaton Square." This class of cases rarely comes under the head of "genteel poverty." They were at the top, and hey presto! by some malignant stroke of fate, they are at the bottom; and there they stick.

I don't believe in bachelors ever experiencing the pinch of poverty; I have heard them complaining of it at the club, while ordering Medina oysters instead of Natives, but, after all, what does it signify even if they were reduced to cockles? They have no appearances to keep up, and if they cannot earn enough to support themselves they must be poor creatures indeed.

It is the large families of moderate in-

come, who are delicate, and have delicate tastes, that feel the twinge: and especially the poor girls. I remember a man, with little care for his personal appearance, of small means but with a very rich sense of humor, describing to me his experiences when staying at a certain ducal house in the country, where his feelings must have been very similar to those of Christopher Sly. In particular he drew a charming picture of the magnificent attendant who in the morning *would* put out his clothes for him, which had not been made by Mr. Poole, nor very recently by anybody. The contempt which he well understood his grace's gentleman must have felt for him afforded him genuine enjoyment. But with young ladies, in a similar position, matters are very different; they have rarely a sense of humor, and certainly none strong enough to counteract the force of a personal humiliation. I have known some very charming ones, compelled to dress on a very small allowance, who, in certain mansions where they have been occasionally guests, have been afraid to put their boots outside their door, because they were not of the newest, and have trembled when the officious lady's maid has meddled with their scanty wardrobe. A philosopher may think nothing of this, but, considering the tender skin of the sufferer, it may be fairly called a pinch.

In the investigation of this interesting subject, I have had a good deal of conversation with young ladies, who have given me the fullest information, and in a manner so charming, that, if it were common in witnesses generally, it would make Blue-Books the most delightful description of reading.

"I consider it to be a pinch," says one, "when I am obliged to put on black mittens on occasions when I know other girls will have long white kid gloves." I must confess I have a prejudice myself against mittens; they are, so to speak, "gritty" to touch; so that the pinch, if it be one, experienced by the wearer, is shared by her ungloved friends. The same thing may be said of that drawing-room fire, which is lit so late in the season for economical reasons, and so late in the day at all times; the pinch is felt as much by the visitors as by the members of the household.

These things, however, are mere nips, and may be placed in the same category with the hardships complained of by my friend Quiverfull's second boy. "I don't mind having papa's clothes cut up for me," he says, "but what I do think hard is getting Bob's clothes [Bob being his elder brother], which have been papa's first; however, I am in great hopes that I am outgrowing Bob."

A much more severe example of the pinch of poverty than these is to be found in railway travelling; no lady of any sense or spirit objects to travel by the second, or even the third class, if her means do not justify her going by the first. But when she meets with richer friends upon the platform, and parts with them to journey in the same compartment with their man-servant, she suffers as acutely as though, when the guard slams the door of the carriage with the vehemence proportioned to its humble rank, her tender hand had been crushed in it. Of course it is very foolish of her; but it demands democratic opinions, such as almost no woman of birth and breeding possesses, not to feel *that* pinch. Her knowledge that it is also hard upon the man-servant, who has never sat in her presence before, but only stooped over her shoulder with "'Ock, Miss," serves but to increase her pain.

A great philosopher has stated that the worst evil of poverty is, that it makes folks ridiculous; by which I hope he only means that, as in the above case, it places them in incongruous positions. The man, or woman, who derives amusement from the lack of means of a fellow-creature, would jeer at a natural deformity, be cruel to children, and insult old age. Such people should be whipped and then hanged. Nevertheless there are certain little pinches of poverty so slight, that they tickle almost as much as they hurt the victim. A lady once told me (interrupting herself, however, with pleasant bursts of merriment) that as a young girl her allowance was so small that when she went out to spend the morning at a friend's, her promised pleasure was almost darkened by the presentiment (always fulfilled) that the cabman was sure to charge her more than the proper fare. The extra expense was really of consequence to her, but she

never dared dispute it because of the presence of the footman who opened the door.

Some young ladies—quite as lady-like as any who roll in chariots—cannot even afford a cab. "What I call the pinch of poverty," observed an example of this class, "is the waiting for omnibus after omnibus on a wet afternoon and finding them all full."

"But surely," I replied with gallantry, "any man would have given up his seat to you?"

She shook her head with a smile that had very little fun in it. "People in omnibuses," she said, "don't give up their seats to others." Nor, I am bound to confess, do they do so elsewhere; if I had been in their place, perhaps I should have been equally selfish; though I do think I should have made an effort, in this instance at least, to make room for her close beside me.*

A young governess whom some wicked fairy endowed at her birth with the sensitiveness often denied to princesses, has assured me that her journeys by railway have sometimes been rendered miserable by the thought that she had not even a few pence to spare for the porter who would presently shoulder her little box on to the roof of her cab.

It is people of this class, much more than those beneath them, who are shut out from all amusements. The mechanic goes to the play and to the music-hall, and occasionally takes his "old girl," as he calls his wife, and even "a kid" or two, to the Crystal Palace. But those I have in my mind have no such relaxation from compulsory duty and importunate care. "I know it's very foolish, but I feel it sometimes to be a pinch," says one of these ill-fated ones, "to see them all [the daughters of her employer] going to the play, or the opera, while I

am expected to be satisfied with a private view of their pretty dresses." No doubt it is the sense of comparison (and especially with the female) that sharpens the sting of poverty. It is not, however, through envy that the "prosperity of fools destroys us" so much as the knowledge of its unnecessariness and waste. When a mother has a sick child who needs sea air, which she cannot afford to give it, the consciousness that her neighbor's family (the head of which perhaps is a most successful financier and market-rigger) are going to the Isle of Wight for three months, though there is nothing at all the matter with them, is an added bitterness. How often it is said (no doubt with some well-intentioned idea of consolation) that after all money cannot buy life! I remember a curious instance to the contrary of this. In the old days of sailing-packets a country gentleman embarked for Ireland, and when a few miles from land broke a blood-vessel through sea-sickness. A doctor on board pronounced that he would certainly die before the completion of the voyage if it was continued; whereupon the sick man's friends consulted with the captain, who convoked the passengers, and persuaded them to accept compensation in proportion to their needs for allowing the vessel to be put back; which was accordingly done.

One of the most popular fictions of our time was even written with this very moral, that life is unpurchasable. Yet nothing is more certain than that life is often lost through want of money—that is, of the obvious means to save it. In such a case how truly has it been written that "the destruction of the poor is their poverty"! This, however, is scarcely a pinch, but, to those who have hearts to feel it, a wrench that "divides asunder the joints and the marrow."

A nobler example, because a less personal one, of the pinch of poverty, is when it prevents the accomplishment of some cherished scheme for the benefit of the human race. I have felt such a one myself when in extreme youth I was unable, from a miserable absence of means, to publish a certain poem in several cantos. That the world may not have been much better for it if I had had the means does not affect the question. It is easy to be incredulous. Henry the Seventh

* There is, however, some danger in this. I remember reading of some highly respectable old gentleman in the City who thus accommodated on a wet day a very nice young woman in humble circumstances. She was as full of apologies as of rain-water, and he of good-natured rejoinders intended to put her at her ease; so that he became, in a Platonic and paternal way, quite friendly with her by the time she arrived at her destination—which happened to be his own door. She turned out to be his new cook, which was afterward very embarrassing.

of England did not believe in the expectations of Columbus, and suffered for it; and his case may have been similar to that of the seven publishers to whom I applied in vain.

A man with an invention on which he has spent his life, but has no means to get it developed for the good of humanity—or even patented for himself—must feel the pinch of poverty very acutely.

To sum up the matter, the longer I live, the more I am convinced that the general view in respect to material means is a false one. That great riches are a misfortune is quite true; the effect of them in the moral sense (with here and there a glorious exception, however) is deplorable: a shower of gold falling continuously upon any body (or soul) is as the waters of a petrifying spring. But, on the other hand, the occasional and precarious dripping of coppers has by no means a genial effect. If the one recipient becomes hard as the nether millstone, the other (just as after constant "pinching" a limb becomes insensible) grows callous, and also (though it seems like a contradiction in terms) sometimes acquires a certain dreadful suppleness. Nothing is more monstrous than the generally received opinion with respect to a moderate competence; that "fatal gift," as it is called, which encourages idleness in youth by doing away with the necessity for exertion. I never hear the same people inveighing against great inheritances, which are much more open to such objections. The fact is, if a young man is naturally indolent, the spur of necessity will drive him but a very little way, while the having enough to live upon is often the means of preserving his self-respect. One often hears what

humiliating things men will do for money, whereas the truth is that they do them for the want of it. It is not the temptation which induces them, but the pinch. "Give me neither poverty nor riches," was Agur's prayer; "feed me with food convenient for me, lest I be full and deny Thee, and say, Who is the Lord? or lest I be poor and steal." And there are many things, flatteries, disgraceful humiliations, hypocrisies, which are almost as bad as stealing. One of the sharpest pinches of poverty to some minds must be their inability (because of their dependency on him and that of others upon them) to tell a man what they think of him.

Riches and poverty are of course but relative terms; but the happiest material position in which a man can be placed is that of "means with a margin." Then, however small his income may be, however it may behoove him to "cut and contrive," as the housekeepers call it, he does not feel the pinch of poverty. I have known a rich man say to an acquaintance of this class, "My good friend, if you only knew how very small are the pleasures my money gives me which you yourself cannot purchase!" And for once it was not one of those cheap and empty consolations which the wealthy are so ready to bestow upon their less fortunate fellow-creatures. Dives was, in that instance, quite right in his remark; only we must remember he was not speaking to Lazarus. "A dinner of herbs where love is," is doubtless quite sufficient for us; only there must be enough of it, and the herbs should be nicely cooked in an omelette.

—*The Nineteenth Century.*

HENRI MURGER.

"La Bohème est le stage de la vie artistique, c'est la préface de l'Académie, de l'Hôtel-Dieu, ou de la Morgue."—*"La Vie de Bohème."*

"Does it not seem to you, as to me, that you have lived many times over?" said poor Murger to one of his friends.

There is an unconscious pathos in that simple question. It is eloquent of pain, of misery silently endured, of cares that made each day of the three hundred and sixty-five seem long as ten. Happy

souls never rail at time as a laggard. For them the hours skim by on the rapid wings of the swallow. They are rosy-bosomed, and come in the train of Venus, these wanton daughters of Kronos. Golden, evanescent, laughed, they lightly mark their passage on the gracious dial of the flowers.

But for him who languishes under the

world's neglect, who feels the grip of hunger, who buries his face in his pillow in a paroxysm of mute despair as he lies awake in the night watches listening to the stealthy feet of Want creeping up the poor staircase to the door of his miserable garret; there is not one space of time, however infinitesimal, that does not add its load to the already well-nigh unbearable burden!

Born in indigence; passing twenty years out of a brief thirty-eight, between the attic and the hospital; hopeful, ardent, and industrious; gay as a lark; faithful as a dog; honest as the daylight; poor as Job, behold the portrait of Henri Murger, poet, platonist, martyr—and Bohemian!

Monsieur notre lecteur (here we venture to address the refined individual who is doing us the honor to flutter our pages with his straw-colored glove-tips, as he languidly puffs at an eighteenpenny Havana), do you know what a Bohemian is? Permit us to explain for you. A Bohemian is a creature of disreputable tastes, who dines (when he *does* dine) in an old jacket out of elbows, who puts on a shirt a week and travels without a tub, who makes his entrance and his exit amid a wailing chorus of duns, debts, and difficulties—who is, in short, a selfish, needy citizen of that widespreading republic of dirt, dissoluteness, and disorder. Have we interpreted your meaning aright? You close your eyes indifferently (how is it possible that such a subject should interest *you*?) as you faintly nod your ambrosial locks, fresh from the brushes of Douglas. Now if we were to tell you that there are Bohemians who can meet a man better dressed than themselves and not attempt to borrow a sovereign; that there are Bohemians who work harder than a prime-minister for less pay than the gentleman who uses your shaving-cream, and wears your boots, and lets you call him your servant by way of a joke; that there are Bohemians who are honest, moral, abstemious, possessed of domestic virtues and a love of order, on whom that epithet is bestowed rather to designate their misfortunes as a class than their shortcomings as individuals—you would doubtless be as much surprised as it is in your nature to be.

Nevertheless it is true, O patrician!

All popes have not been Borgias. All priests are not St. Anthonies. All Bohemians are not Bohemians, inasmuch as many are solvent on a few pence a day; some are laborious; a few are gently born and bred; all are lavish of kindly sympathy, and free-handed with their coin when the skies weep golden rain. For it sometimes happens that even editors have transient flashes of feeling, and stage-managers incline their ears to divine promptings, and the *salon* opens its arms at last to poor patient Paul Veronese, sitting weary, heart-sick, dinnerless and tobaccoless, alone in his darkened studio!

Once upon a time there was a viscount of the great family of the Carews, who was a vagabond second to none. He locked his coronet up in a drawer, left the moss and lichen to carpet the terrace walks, and everything to go to the devil, and ran away one fine spring morning to join a tribe of wandering gypsies. And in this select society he spent the rest of his graceless days, roving about from common to common and from wood to wood, staining his fine escutcheon with such miserable delinquencies as pot-lifting and carrot-pulling, raids upon poultry-roosts, and perhaps even occasional kidnapping—liking the wild free life so well, that his ancestors never had the chance of frowning upon him in the halls of his fathers, for thither he returned no more.

There was a Tsar, upon whose lightest breath depended the lives of millions of human beings, who went about from dockyard to dockyard, armed, not with the sceptre of royalty, but with the hammer of a shipwright. With this massive instrument he made a grand music from sunrise until sundown as he drove the great nails into the shrieking vessel's side with lusty Herculean strokes—taking his day's wages for a day's labor, like any other son of toil, and pouring enough brandy down that bullock's throat of his to float a man-of-war.

And only a year or two ago a heavy sea washed over the decks of a sailing ship outward-bound, carrying away with it an unfortunate stoker, who was whirled into the seething surges and went down to come up no more. It was only when inquiries came to be set on foot, and advertisements inserted in the

newspapers, that the dead stoker was found to have been a live earl with an unsullied name, and more thousands a year than half of us have got capital at our banker's *pour tout potage*.

All these three men were Bohemians in a reprehensible sense. They had everything in the world that they could want, and much that they could not possibly want. They had wealth, title, power, and consideration. They could have worn diamonds in their shirt-fronts as big as peach-stones, have dried their love-letters with real gold dust, and have perfumed their morning bath with attar of roses at a guinea a drop. If any one of them had shown the slightest inclination for an artistic career, how easy the way would have been made for him! He would have been gently pushed along the royal road of progress, and have found himself comfortably niched in the Temple of Fame before he could have said Jack Robinson! with nothing whatever to do but fall into a becoming attitude, and receive the humble felicitations of the crowd. But they had no such lofty desires. Unambitious proletarians, they were actuated by nothing more than the restless spirit of vagabondage, although Peter the Tsar might have had an eye to some future little shipbuilding arrangements on the banks of the Neva. Born to the highest, they chose the lowest; and though they might have feasted on potted larks of Pithiviers off Sèvres plates of the King's Blue, they preferred to munch the sheep's trotters of poverty off platters of common delf. They were Bohemians *pius et simples*, and discarded their ermine for frieze at the very first opportunity. Yet such as these society, all over the world, scourges only with a bunch of roses, and is still prepared to say of them, as of Lady Jones, "and of such is the kingdom of heaven." Bohemianism indeed! there is no more Bohemianism about these delightfully eccentric creatures than there is cannibalism!

But there is no such indulgence for the sons of genius and penury whose intelligence lifts them above the sphere in which they were born, and whose poverty degrades them below it, who flock together (in Paris at least) and form a society among themselves, where the Muses are always welcome though the *bourgeois* may disdain to come, and who permit

themselves to be called "Les Bohèmes" without resentment, only too happy if from time to time one of the brotherhood attain to the columns of the *Revue des deux Mondes*, obtain a hearing at the Théâtre Français, or gain the "Prix de Rome."

To sons of cobblers, of porters, of little tradesmen, of big tradesmen, of gentlemen of independent means, of gentleman of no means at all, that undefined borderland of Bohemia, the Bohemia of Murger, offers asylum to all proselytes wild with the worship of poetry, of painting, of literature, of all those sublime ideals which men distinguish the "Beaux-Arts" and the "Belles-Lettres." Lads upon whom a disappointed father has bade his footmen close the door of home as he locks up the paternal heart and the paternal cash-box; run-away lads whose relatives put them with the grocer or the pork butcher in the hope of stifling that fatal hankering after rhyming couplets or hog's-hair painting-brushes; lads who, crazy with enthusiasm, mad for more knowledge, have left the hamlet wherein they were born, followed by the tears and blessings of gray-haired parents, and have plodded their way on foot to the great city (called thither by the same irresistible fascination which impels the moth to circle round the destroying light), carrying with them all their fortunes à la Dick Whittington, where among the scanty linen which fills the modest bundle lie the few books, the worn stumps of pencil, the sheets of transcribed music—humble tools of the novice that by and by will grow into the mighty instruments of the master—the violin of Paganini, the chisel of Canova, the pencil of Eugène Delacroix!

Habiting the same quarter, they congregate beneath the same roof-trees, frequent the same *cafés*, form one family united by ties stronger than those of blood—the sympathy existing between men of golden dreams and iron fortunes. All are equally rich in youth and hope, and all are equally embarrassed to resolve that intricate problem, How to live upon nothing at all. Meanwhile they are gay; they work unceasingly; they live from hand to mouth and exist for days together on dry bread; they mount up the creaking stairs to their

dingy garrets, half cellar, half loft, with the elastic step of a lover; they lie down on their truckle-beds with empty stomachs and teeming brains, and Poesy leads them with her enchanted wand softly into the hushed caverns of Sleep. Occasionally one burns his papers, blows out the candle, and, stealing downstairs on tip-toe, makes his way straight to the river; from time to time one of these poor lads grows delirious with raging fever, and has to be borne to the hospital; and there have been some, weaker or more sensitive than the rest, who, driven mad by privation and the activity of a too-creative brain, have ended their brief literary career with manacled wrists and a strait-waistcoat.

Bohemian! Comprehensive epithet, which embraces the north and south poles of existence, which amalgamates sun and ice, which unites horrors the most lugubrious to pleasures the most delicious!—it shall not die out as long as the world lasts, as long as youth has to struggle thigh to thigh with the fearful spectre of poverty, like Jacob wrestling at dead of night with the dark shape of fear upon Penue!l, so long as society, to its shame, denies to aspiring genius the bread it bestows upon convicted crime!

Thou smug, warm-coated fingerer of millions, passing on thy way to the counting-house or the Bourse! if thou meetest at the street corner a young man marching with head erect against the bitter wind, the water running in channels out of the cracked sides of his thin shoes, the fire of intelligence flashing in those bright eyes which take in the whole of heaven at a glance, step reverently out of his path, and follow him with thy heart's benedictions! For under that nameless head-covering trembles the light of a dawning star. The laurel wreath he shall one day wear is a million times more imperishable than thy legion of honor. For mindest thou not, forgetful fool as thou art! that such men as yonder shabby adolescent have written themselves Balzac and Béranger?

"His verse is sad, his prose is gay," writes Jules Janin, the adorable critic whose empty chair is still left empty, with whose disappearance criticism has become a lost art. Gay, it is possible,

but with what a ghastly merriment! It is the strident laughter of agony; the smile writhing the thin lips of the boy-Spartan who nervously strains the fox closer to him under his garments as it lacerates his entrails with its cruel claws; the mocking cachinnation that is a thousand times more heart-rending than a tempest of tears.

It is the Egyptian feast depicted by the painter. Amid the joyous abandon of the hour, the exquisite bloom and odor of the floral garlands, the trembling lights, the vine-leaved wine-cup blushing rosy-red with the juice of the autumn vintage, the confused shouts of the revelers, the voluptuous breathing of the musicians, obtrudes the rattle of shaken bones, as the fleshless skeleton, brought to light from the depth of the dusty sarcophagus, is silently borne through the crowd of heedless roisterers.

Hold! the bottle, the glass! *Mes amis*, let us pledge one another! Let us laugh, let us be merry, let us make love! Let us embrace our Musettes, our Lisettes, our Maries, all our adorable little friends in their muslin dresses and sandalled slippers! Their dainty fingers are the equal of yours, O pale and beautiful duchesses! except that they are wounded with needle-pricks; their coquettish caps are more becoming than your starry coronets! Let us kiss them with as many kisses as there are bubbles in the champagne-glass, as there are living eyes in the night-sky of summer! Let us be joyous, extravagant, mad with love and laughter! On the façade of the Athenian temple was written the eloquent legend, "Be joyous," and Solomon bade his son rejoice in the days of his youth. Athens was Paris on the Ilissus, and who shall contest the wisdom of Solomon? Let this legend, then, and no other, be engraven on the temples of our hearts! For oh, my friends, what care? To-morrow we may be stretched on the hospital-bed surrounded by strange faces. To-morrow it may be our turn to lie upon the slab of the dead-house, with a jet of cold water plashing down over our swollen carcasses, full to bursting with drinking our fill at the bottom of the Seine!

Henri Murger was a son of the people. He was no aristocrat like Alfred de Musset or Monsieur le Comte de Cha-

teaubriand. He was the round-eyed, round-cheeked, round-limbed little son of a *concierge* who pulled the string for the great tenor Lablache, and that nest of nightingales the Famille Garcia. From his earliest days he had a peep into the interior of artist-life, and the slim "Paolita," the contemporary of Rachel, loved to rock on her knee the nice, cleanly kept little boy in blue, whose mother dressed him like the son of a great lady. The father and mother had frequent quarrels about that only child, for Murger *père* was brutal, and matter-of-fact, with no ideas above his station, while his wife, poor soul! dreamed only of educating her boy for a gentleman, and denied herself the finery so dear to feminine hearts, in order to put it upon the back of "Bluet," that he might be taken without offence upon the laps of those princesses of the opera stage.

Like most lads of his class, he left school just at the time when he was beginning to learn something. At fourteen he is tolerably proficient in the three R's, and office-boy to a lawyer. But Fate, who does not intend that he shall ever enliven the "Cour d'Assise" with his wit, throws him into the company of two other office-boys, the brothers Bisson, who lodge in a house swarming with struggling artists. In the society of these embryo Titians young Murger imbibes an intense love of art, and a boundless enthusiasm for the untrammelled freedom of a student's life. He tries his hardest to draw and paint, but he cannot succeed in producing any but the merest daubs. He is as much at home with a mahl-stick and a palette-knife as a cow is supposed to be with a watch, according to the French expression. He will never wrest the laurel from the brows of Horace Vernet. *Tant pis pour les arts!*

But the gay young painters in their holland blouses, smelling of turpentine and megilp, have friends whose clothes and fingers are stained with ink, and who are poets and journalists, and writers of novels. *A la bonne heure!* Henri buys paper and pens, and a bottle of *encre noire*, sits down to see what he can do with such implements, and to his delight finds that he can string together lines which rhyme.

Years go on. The lad timidly jotting

down his first verses is now a young man who writes indifferent poetry, of which he is as proud as Lucifer, and brilliant prose, of which he thinks nothing at all. *A l'heure qu'il est*, he is secretary (let us hope that meanwhile he has improved that villainous handwriting of his!) to a Russian Count Tolstôï, and has lodgings with his father, who now writes *Tailleur* after his name, and spends his days sitting cross-legged upon a table with a pile of garments before him, at which he stitches busily from morning to night. Very uneasy is that matter-of-fact parent, you may be sure, at the way things are going with his son, who, instead of taking up with a decent trade, must needs be reading such rubbish as Shakespeare and Victor Hugo, and associating with a crowd of ne'er-do-weels, who have not a coat among a dozen of them that will bear the daylight. If it were not for the thirty francs a month which the lad pays him for board and lodging, old Murger thinks, as he wags his head solemnly from side to side, he would certainly give him the key of the street; for this model father looks upon his offspring only in the light of a lodger, who while he pays is entitled to a certain consideration, and when he does not, is to be bundled downstairs without any further ceremony.

The relations existing between the two men (never of a cordial character since the days when the *concierge* swore at his meek partner, and shook his fist in her face because she brushed little Henri's hair and pinned a pocket-handkerchief to his blue tunic) are destined shortly to lose all semblance of friendliness. Love, who sooner or later comes to disturb the peace of every youthful heart, does not wait very long to bend his bow and let fly a shaft in the direction of the secretary of Monsieur le Comte de Tolstôï, whose mustaches have hardly begun to grow. From poet to lover is an easy transition, and from keeping good hours to keeping bad ones easier still. The sighing Strephon is at the feet of his mistress, who ought to know better than to let him remain there, for she is a married woman. The scowls of the tailor and ex-*concierge* deepen as the young reprobate returns home later and later every evening, and the elder man is not sparing of his tongue as he gives Monsieur Henri

his chamber candlestick. But at last, oh shame! oh scandal! twilight becomes midnight, and midnight becomes daylight, and the lad has never been back to bed at all! He has slept "out," a sin unpardonable in the eyes of the strict father, who forgets that Henri is not ninety, but nineteen. Marie's platonic admirer is Marie's guilty accomplice. "It is well," says Murger *père*, calm and resolute as a Napoleon, as he turns the key in the lock; and when the lad essays to mount the staircase to his garret again, he is told that beneath the paternal roof he can remain no longer.

So the little bark with Youth at the prow and Pleasure at the helm becomes fairly launched on the wide ocean of life. Thrown into the world with nobody to look after him (his mother is dead long ago), and with nothing to rely upon but the trifling salary he gets from the Russian count, young Murger is brought face to face with real misery. He joins the ranks of the Bohemians, and resolves to become a *littérateur*. Meanwhile he chooses a companion, equally poor, equally hopeful, and it may be equally amorous as himself, and together they rent an apartment in the Rue Montholon.

This horrible chamber is long and narrow. It is illuminated by a solitary skylight, through which the day streams faintly, making the atmosphere of the garret as sombre as the fortunes of its tenants. The decorations are not costly. An old writing-table littered with papers and books, pipes and empty tobacco-screws, betray the lodgers' tastes, at once classic and Bohemian. Three china plates, two glasses from a wine-shop, and two iron forks represent the art furniture. There is no fireplace in the room, and Paris this winter is as cold as Moscow. Murger works like one possessed, at poetry, at prose, at play-writing; but his fingers get so benumbed that he takes to scribbling in bed to keep himself warm. "*Sapristi*, boys! you live rather high up! I have counted twelve flights of stairs!" cries the stout father of Murger's friend, as he arrives breathless at the door of the attic. In truth one must be pretty nimble to race up and down that half-mile of staircase, steep as a ladder!

Murger, emancipated from the pa-

ternal yoke, has now a right to be called a man, although not yet twenty years of age. He is amiable, frank, simple, and deeply affectionate; confiding as a baby, wanting in decision of character, like all soft-hearted people, having in him something of the docile gentleness of the Teuton inherited from his mother. For the harsh parent he has lost he has found a whole army of brothers—generous souls, ever ready to lend and to give when they have it; and when they have not, to borrow and to take! United by the strongest bonds of fellowship, these Bohemians are the Freemasons of Misfortune. They have their laws, which make it incumbent upon a man to divide his tobacco, his bread, or his bed with a comrade lacking any of these. He who is the fortunate possessor of an irreproachable coat or an entire pair of pantaloons is bound to give them, up to another on any great occasion, such for instance as a visit to an editor, for the Bohemians are not insensible to the advantages of a good appearance. And, above all things, it is the strictest point of honor that everybody should respect his neighbor's sweetheart.

Murger is still passionately devoted to Marie, and so he will remain all his life. But Marie is fickle, and does not care more for her young lover than she did for her old husband, and yet this ill-conditioned young woman is only twenty-four! Poor Henri is destined to receive a rude shock in his tenderest feelings one of these days, and then the illusions he still has about love and friendship, and the honor of human nature, will vanish away like a puff of smoke.

He tells his own story, word for word, in the "*Scènes de la Vie de Jeunesse*":

"The loves of Marie and Olivier lasted eighteen months, during which time they never deviated from the pure paths of sentiment. At the end of this time, continual losses made at play caused Monsieur Duchampy to engage in some rotten affairs, mixed up with forgery. He was obliged to fly to England, to avoid being arrested. His wife stayed behind in Paris, penniless. Olivier, who until then had never remained with Marie but from morning until night, now remained once from night until morning. It was a winter's night—one of those long nights, so long and so bitter for the poor, so short and so sweet for those who pass them with their arms about the neck of a beloved woman. But the morning after this night was terrible. Madame Duchampy received information that she would be arrested as the accom-

plise of her husband, mixed up with a gang of suspected persons. Seeing the liberty of his mistress menaced, and without reflecting for a single instant that he might get himself into trouble by hiding her from those who were after her, Olivier resolved to save her who henceforth had no other protector than himself. As he could not take her to his father's house, where he was lodging, Olivier thought of one of his friends, a young painter, who, besides the studio in which he worked, had a room to sleep in, close at hand. Urbain consented to give up this room to Olivier, who concealed her there. Urbain sometimes came and passed the evening with the two lovers to whom he afforded hospitality. After several visits he called one day during the absence of Olivier and remained a long time with Marie. The next day he came back again; and again the day after that. The third day, when he returned in the evening, Olivier found the room empty. Marie had gone, leaving him a short note."

From this date the tenderness of Murger is mixed with distrust and irony. The dream he has caressed with so many smiles is extinguished in tears. The magnitude of his first great sorrow has broken him down. Added to this, his health is seriously impaired by want, and the long nights in which he has sat up writing until daybreak.

Three months afterward, succumbing to disappointment and wretchedness, he enters the hospital for the first time. How often is he to return thither in the course of the next twenty years!

Hard, cheerless, and terrible is the life that Murger has to endure when he leaves the sick-ward, where, at least, he had a bed to lie upon and food to eat. "I have not been able to work since the departure of Lelioux," he writes to a friend, "and I have not a penny in the world, so that I have to walk about in my socks, not being able to buy any boots."

What a revelation are these letters of his! Together they make up a real "Comédie Humaine." They laugh, they cry; they are ironical, pathetic, sparkling with wit, eloquent with feeling; delightful from the glimpses they give us of the inner life of that tribe of gypsies camped in the very heart of Paris, who drink champagne one day and sugared water the next; who turn up their noses one night at Périgord truffles, when the night after they make a delicious supper off a boiled potato!

"Now I am going to proceed in due order to give you the information you ask concern-

ing the men and things, well known to us, but ignored by the world at large, alas!!!!

"Lelioux has gone back to the *Académie Journal*; is in excellent health; drinks Bordeaux, the brand of St. Georges; eats *pâtés de foie gras*; lives in splendid rooms; has a cashmere dressing-gown; and writes two thirds of a hemistich a day. Sum total, he is very happy—I condole with him.

"Pothier is forever divorced from the Muse. He has babies as fat as himself. In short he is subsiding into the tradesman. He is an excellent citizen, capable of making a very good national guard, if he were not troubled by the defect of always going to sleep. On duty he would be capable of letting himself be carried away, sentry-box and all, without knowing it.

"The Desbrosses pass half of the day in doing without food, and the other half in shaking with cold. The cats look askance at them, and in the way of a chimney they only possess their pipes—often without tobacco. They talk frequently of you, of your ex-beard, O Vandal! of your poems, O great man! In conversation like this the time passes, but hunger remains, and they go to bed to dream that they are dining at Vefour's. Here at least are some jolly fellows favored by existence!

"G— (Mr. and Mrs.). This establishment is broken up. Madame has carried her Penates *je ne sais où* (Victor Hugo), and Monsieur, who is commissioned to paint four large copies for some house or another, is in love with a young girl pure as the lilies of the valley (Balzac). . . . As to your humble servant. . . . The aforementioned has found the means of getting rid of forty francs in fifteen days; but fortunately he has got forty *sous* left to carry him on to the end of the month. His existence has therefore been, during the first fifteen days, checkered by beef-steaks and the light of heaven's candles; by Havana cigars and ragged shirts; by preserved comfits and brown bread. To-day he has only got his landlord to settle with, and his bootmaker ditto; but he is bound to produce verses by main force, diluting here and there quality with quantity; making a grimace at misfortune, and dreaming at the present moment of the satisfaction he would feel in seeing you by his side smoking a pipe and assisting him to discover the way to remove without paying the rent, and, still more useful, the way to make one's boots last more than six months, and one's debts always! . . .

"V— is decidedly a worthless creature. He took me to work at Marco St. Hilaire's, and since fifteen days I have not set eyes on the above-named Marco, who owes me sixpence. But I am generous. I abandon it to him."

"6th March, 1842.

"Let me tell you that the day I received your parcel was the third that I had not eaten anything but dry bread, which is my excuse. I hope that you will forgive me for having taken twenty francs of the sixty I received. . . . I have never been so unhappy, my poor friend. As for S—, he pays me the thirty francs he owes, fourteen *sous* by fourteen; I do not find it

amusing. In short, I am horribly weary. Without 'Christ,' who has given me dinner and breakfast four times a week, I do not know what would have become of me. That lad has not come by his appellation unjustly."

"Christ" was the *sobriquet* given to the unfortunate Joseph Desbrosses by his brother Bohemians. Gentle as a woman, serenely religious, magnanimous, lofty-souled, and of rare genius, he was fated to expire in the hospital at twenty-three years of age, of sheer want and wretchedness, dying, as Murger says, "*sans pose, en faisant la laide grimace des agonisants*!"

Murger is no longer the plump, rosy boy that he was once. Lack of proper nourishment, the shiftless, comfortless life, real cares and imaginary sorrows, have already begun to hollow in his cheeks and cloud his complexion. He works indefatigably, and always during the night. When the morning breaks, his pen drops from his hand, and his brain refuses its office. It is habit, if you will, but a habit that is second nature. To keep himself from falling asleep he drinks coffee as black as ink all the night long. And yet, though his prose is delicious, and bright with joyous humor, though he is never absent from his work, but slaves unceasingly, he cannot scrape enough to keep body and soul together.

The pipe, the only consolation of so many cheerless hours, has nothing in it but ashes; the winter wind whistles through the ill-fitting casement; there is not a single billet of wood to throw into the cold stove; the cupboard is bare of victuals; the flask is empty of wine. O gifted soul, tied to a frail body that feels the need of fire and comfort! Here are the pen, the ink-bottle, the blank sheet of paper, all the signs of thy craft. Rack thy brains, exhaust thy ingenuity; outshine by still more lively ventures the frolicsomeness of thy wit. Let thy busy quill travel across the page until daylight, for Paris is waiting to laugh at thy sallies, and thou art waiting for a meal!

The health of Henri Murger grows worse and worse. These poisonous draughts of mocha and these continual vigils have developed in him the germs of a terrible malady. He is stricken down by an intermittent eruption called *purpura*, which comes on once a week,

covering him from head to foot with purple blotches, and making him so weak that he cannot stand. He returns, then, to the surgeon and the Sisters of charity.

"Hospital St. Louis, 30th May, 1842.

"... If you are in funds, send me a P. O. O. for five francs. It would oblige me very much, because I see the moment approaching when the Desbrosses will not be able to bring me any tobacco. . . . I am very weary here, and have some very wretched days, all the more because there is not one that passes without my seeing, in the next room to mine, men dying like flies. . . ."

"12th August, 1842.

"... But money, money? . . . all that is not money! I see myself sinking deeper than ever into the most atrocious misery. We live all together, Chintreuil, Gothique, and I. And what a life! 'Christ' by a blunder of the doctors is nailed to his bed for another six weeks. They were deceived as to the nature of his illness, and nobody seems to know exactly *what* it is. The most terrible matter for me is, that the same fate is hanging over my own head. I have certainly injured myself by the abuse of coffee and sitting up all night, and it would not be surprising if I were soon to go and rejoin 'Christ,' Vastrian, and G—, who are all three at the hospital. . . . 'Christ' supplicates you to write him a long letter; I beg you to do as much for me. Try to inspire us with a little courage! We are about as well off for that as for bread and tobacco!"

"10th November, 1842.

"Behold me again returned into private life, and, my faith! it is well called so, for I am in truth deprived of all! Alas! yes, always the same old song! Our existence is like a ballad composed of many couplets; now it goes well, now it goes badly; now better, now worse, etc., but the burden is always the same, misery! misery!"

Good reason indeed had Murger to say of himself and his brave-hearted colleagues, "*Ah, pauvres diables que nous sommes!*"

Yet misfortune permitted these "*pauvres diables*" to be gay occasionally. Now and again they even laid hands on a little money (not very frequently though, it must be confessed!) and then, *gare la bombe!* there was no cigar too expensive, no varnished boot too shiny, no theatre-stall too luxurious, no down-pillow too soft, for the Cæsus of a day! They fell in love, and nine times out of ten were deceived, because they expected the impossible. They believed, the simple Simons! that love and kisses were all a pretty young woman wanted to make her happy, and trill

about their aerial perches like larks in a cage. They forgot that there were jewellers in the Palais Royal who sold finger-rings and brooches and glittering watch-chains, and *fournisseurs* in the Chaussée d'Antin who sold silks for dresses that were thick as a board; and utterly ignored the fact that Cupid is a much more attractive little boy, from a feminine point of view, when he is nicely dressed than when he has nothing on!

"*Les grisettes restent avec leurs amants tant qu'elles ont du cœur, et elles nous quittent dès qu'elles ont de l'esprit*," writes Murger the satirist. Who knew better than he what reliance was to be placed upon the vows of woman? Had he not seen more than one ungrateful charmer trip down his staircase for the last time, tying her bonnet-strings as she went, and spring into the brougham which was waiting to bear her away to satins and diamonds, and the society of rich fools, and shame without end?

Have you ever read the song of Musette? Alexandre Dumas *fils*, the biographer of "La Dame aux Camélias," said of it, "I would willingly relinquish the authorship of all my books only to have written the song of Musette." The musician set it to music. It is the *chef-d'œuvre* of Murger's verses, because it is not only his genius that sings, but his heart also.

"Nous étions bienheureux dans ta petite chambre,
Quand ruisselait la pluie, et quand soufflait le vent.
Assis dans le fauteuil, près de lâtre, en Décembre,
Aux lueurs de tes yeux j'ai rêvé bien souvent.
La houille pétillait. En chauffant sur les cendres,
La bouilloire chantait son refrain régulier,
Et faisait un orchestre au bal des salamandres
Qui voltigeaient dans le foyer.
Feuilletant un roman paresseuse et frileuse,
Tandis que tu fermais tes yeux ensommeillés,
Moi je rajeunissais, ma jeunesse amoureuse,
Mes lèvres sur tes mains, et mon cœur à tes pieds. . . ."

O poet! O fool! To think that you could keep this blonde goddess, whom you called Musette, with the fair heavy tresses falling upon her white neck, to skim your pot, to wash your platters, to

shake your bed! Have not all things, the spring, the sunshine, her own heart—even the cracked fragment of mirror-glass—voices, with which they call out to her, "*Vous êtes belle!*" And beauty, O poet, has its price, just like your verses. There are purchasers in the market whose pockets are full of gold, and yours are empty. The chink of that bright metal is a sweeter music than all your rhymes. It is idle to rail against the inconstant one, to scoff at her Indian shawl, her bracelets chiselled by Froment; to say that she is no longer herself, nor you yourself, when she comes in her carriage to visit you. *Allons donc!* Listen to your friend and brother Delvan, who like you has a love-dream to regret, a *souvenir* to efface, but who, unlike you, is a philosopher withal!

"Flowers and love have but a season. One must not murmur too much against God, because he might be moved, and send us flowers all the year round, and love all our lives long. And the breath of too many flowers is unhealthy for the head, and too much love is unhealthy for the heart. Is it not so, my darling?"

In the "Contes d'Automne" of Champfleury, he gives us a graphic picture of the life led by Murger and himself, sometime companions and fellow-lodgers.

"Nine years ago we lived together," he says, addressing Henri, "and our united fortunes amounted to *seventy francs* a month. Full of confidence in the future, we rented in the Rue de Vaugirad a little set of rooms at *three hundred francs*. Youth does not bother itself about figures. You dazzled the *portière* with visions of such sumptuous furniture that she let you the place upon the strength of your good appearance, without going after references.

"You brought in six plates, of which three were porcelain, a Shakespeare, the works of Victor Hugo, a superannuated chest of drawers, and a Phrygian cap. By the greatest accident I had two mattresses, a hundred and fifty volumes of books, an arm-chair, two other chairs and a table, and, over and above all, a skeleton's head.

"The first eight days passed in the most charming manner. One did not stir out; one worked; one smoked a good deal. I find among my papers a sheet upon which these words are written:

'BEATRIX,
Drama In Five Acts,
By HENRI MURGER.
Represented at the — Theatre
The —, 18—.'

"This page was torn out of an enormous white copy-book, for you had the bad habit of using up all the paper to scribble the titles of dramas on. . . .

"Then came the days of great penury. After a long discussion, in which we heaped reproaches upon one another for the mad prodigality we gave a loose to in all things, it was agreed that, so soon as the income of seventy francs was broken into, a severe account should be kept of the expenditure. And this account-book I find also among my papers. It is simple, touching, laconic, and full of *souvenirs*. We were miracles of honesty the first of every month. I read at the 1st of November, 1843, 'Paid to Madame Bastien for tobacco owed, two francs.' We paid the grocer also, the *restaurant* (there is a *restaurant*!), the coal-dealer, etc.

"The 1st is a day of rejoicing. I read 'coffee, thirty-five centimes.' Wild extravagance! that let me in for no end of rebukes! The same day you bought (I tremble to repeat it!) sixty-five centimes' worth of pipes!

"The 2d of November we give a heavy sum to the laundress—five francs. I pass the Pont-des-Arts like a member of the Institute, and proudly enter the Café Monsus. We were the discoverers of this beneficent establishment, that retailed a *demi-tasse* for twenty-five centimes.

"The 3d of November you decided that while the seventy francs lasted we would do our own cooking. In consequence of this resolve you bought a pot (fifteen *sous*), some thyme, and some bay-leaves. Your instincts of a poet made you think too much of the bay-leaves; the soup had constantly to suffer from them. One laid in a stock of potatoes. There was always coffee, tobacco, and sugar.

"There were wailings and gnashings of teeth when we came to inscribe the expenses of the 4th of November. Why did you let me go out with my pockets so full of money? You were gone to D'Agneaux's to spend twenty-five centimes. What the devil could D'Agneaux give you for twenty-five centimes? Ah! how dear are the simplest pleasures! Under the pretext of going to hear for nothing a drama by an inhabitant of Belleville, I took two omnibuses; one to go, and one to return. Two omnibuses! I was well punished for that waste! By means of a ragged pocket, three francs seventy centimes took to flight!

"How dared I return and brave your anger? Already the two omnibuses would have insured me a blowing-up, but the three francs seventy! . . . If I had not begun by disarming you in recounting the Belleville drama, I should have been lost!

"However, without reflecting upon these terrible losses, we lent G— (who really seemed to take us for his bankers, the firm of Murger & Co.) an enormous sum, thirty-five *sous*. I try to remember by what insidious means this G— contrived to worm himself into our confidence, and I can only discover that it was from the inexperience of our thoughtless youth, for two days afterward G— has the audacity to reappear and demand another loan. Until the 8th of November the

addition is conscientiously made at the bottom of every page. There is an end of the additions. Doubtless we wished to avoid a shock at sight of the total.

"The 10th of November you buy a thimble. Without being a great observer, it is easy to suppose the introduction of a lady, although many men are clever enough to repair their own clothes in leisure moments.

"With the date of the 14th Mr. Credit reappears. Mr. Credit goes to the grocer, to the tobacconist, the coal-dealer. Mr. Credit is pretty well received; he has even some success, in your person, with the daughter of the *épicière*. It is on the 17th of November that Mr. Credit ceases to exist! I see written in the received column, 'overcoat, three francs.' These three francs are from the Mont-de-Piété. What an inhuman institution is this Mont-de-Piété, that one ought to call the Mont-*sans*-Piété! Has it not humiliated us enough by the voice of its assistants! I had pawned my only top-coat, and that in order to lend half the loan to the incessant G—.

"The 19th of November we sell some books. Fortune smiles on us. We have a stewed chicken; with plenty of bay-leaves.

"Mr. Credit continues with great coolness to go foraging for provisions. He presents himself everywhere until the 1st of December, when he honestly pays up all his debts! I have only one grief, and that is to see the little register break off suddenly after a month. Nothing but the month of November—it is not enough! . . . Happy days! when from our little balcony we could see, of all the garden of the Luxembourg, only a tree—and to do that one had to lean right forward."

Murger lived a long while in the common den of the Bohemians, Rue des Cannettes, where he had for companions among other men of genius (artists who, penniless then, are to-day celebrated), Bouvin, Courbet, Chintreuil, the painter and musician Schaub, the philosopher Wallon, the preceptor Barbara, and the song-writer Pierre Dupont.

The "*Vie de Bohème*" of Murger had been dramatized by the aid of Théodore Barrière. The most lively people of the universe were not proof against the wit, the sparkling satire, the reckless gayety of that delicious drama, in which the author did not draw his people from life, but actually photographed them, and Murger became famous, as he well deserved to be.

But money, somehow, he never got. A passionate lover of nature, he took a fancy, which lasted until his death (he was so faithful in all things, this amiable poet), to a village called Marlotte, on the skirts of the forest of Fontainebleau, where he stayed at an inn kept by the

"Père Antony," a hardened old drunkard, whom he has reproduced to the life in the "Sabot Rouge." This disreputable patriarch, always plunged in a vinous stupor, cared little whether his guests had soap or water or towels, provided they were punctually served with their four meals a day. When they had had these, he declared himself contented, and went and stumbled on to his bed. "*Mes pensionnaires, ah oui !*" he would mutter, "*un tas de fainnants ! . . . bien nourris ! ! . . . bien logés ! ! . . . rien à faire ! ! ! . . . Je les plains pas ! ! ! ! . . .*" And then he would begin to snore.

Concerning his affections, Murger made very sincere confidences to the public. He was as faithful to the memory of Marie as Byron was to that of Miss Chaworth—he could never pronounce her name without being affected; and once, when he met her accidentally in the street, he nearly fell upon the pavement in a swoon. Mimi, Musette, Hélène, Francine, Camille, are only so many names for Marie. In all his subsequent passions he was a strict platonist. The ideal and the illusory were sufficient to satisfy him. He looked, but far off, like a poet who feels a passion for a star.

The last songs Murger ever wrote, the "Chansons d'Hiver," issued from the press on the very day of his decease. Sad as death itself are some of these lines which we have now under our eyes, and which are called "A letter to a dead man"—the heart-breaking confidences which the dying poet makes to the dead sculptor, the devoted "Christ," who shared to his last meal with his sick friend. Think of this poor hungry lad dividing his meagre dinner with a starving comrade, and spending his last few little copper-pieces to bring him an ounce of tobacco !

"Parce que c'est ta voix nous écoutons encore ;
Mais rien ne s'émeut plus en nous, car nous
tout est mort.

Depuis longtemps nous sommes calmes.
Nous n'avons plus d'orgueil et plus d'ambition,

Et nous ne rêvons plus cette acclamation
Qui poursuit les vainqueurs des palmes,

'Nous avons cru pouvoir—nous l'avons cru
souvent

Formuler notre rêve et le rendre vivant,
Par la palette, ou par la lyre ;

Mais le souffle manquait, et personne n'a pu
Deviner quel était le poème inconnu
Que nous ne savions pas traduire.

"Puisque nous ne pouvons rien créer, à quoi
bon
Continuer notre œuvre, et faire à notre nom
Ouvrir la bouche de l'insulte ?
Nous nous sommes trompés nous le voyons
trop tard.
Qu'importe ? Il faut laisser les instruments
de l'art
Aux hommes choisis pour son culte.

"Maintenant nous suivons les vulgaires chemins,
Nous ferons au hasard l'œuvre de nos deux
mains,
Pour vivre encore et pour attendre
L'heure où l'on creusera près du tien notre
lit,
Et comme sur ton nom, sur nos deux noms,
l'oubli,
Le lendemain, pourra descendre."

One sees here that it is all over. Tired, exhausted, done for long ago, Henri Murger clings to life only by a thread. Soon will the last forced march be ended. The worn-out hero will crawl to the gates of the hospital, where they will unbuckle his sword, and lift off the heavy haversack, and remove the shoes from his blistered feet, and lead him to the straw palliasse, provided by public charity, on which he may close his eyes in peace.

"*Ah, pauvres diables que nous sommes !*" is now a cry of rage and of despair. Looking about him, the heart of Murger must have been well-nigh bursting with bitterness. The friends of his youth, the more than brothers, where were they ? The devoted, self-sacrificing comrades, long-suffering, uncomplaining, high of heart, what fate had befallen them ? Magnificent in courage, sublime in heroism, baffled again and again, yet never beaten back, advancing steadily onward, rigid as Fate, sworn to conquer or to die, where were they all—where ?

Nadar is in a madhouse ; Joseph Desbrosses lies in his obscure and humble grave, dead, and forever unknown ; Karol, the loyal and generous Karol, called the mother of the Bohemians, whose door had never had lock upon it so that he might be more easy of access to every corner, Karol, too, is dead—away in far Constantinople, whither he went to seek a livelihood as a teacher of

French. G r ald de Nerval, the poet, the creature of delicate brain, of exquisite fancy, of chivalrous honor, poorly dressed as any workman, lofty-hearted as any king—hanged by his own hand! And this because for days and days his overwrought brain refused to create even a single line, and De Nerval was hungry, too proud to borrow, and preferred to make an end of it at once while he had still ten *centimes* left in his ragged pocket, and was a burden upon no one. Oh, inhuman city! Thou ogre, who feedest on the flesh and drinkest the blood of thine own children! Shall not the voices of all these whom thou hast slain importune God unceasingly to award thee the doom of Babylon?

And Murger feels also that his hour has come. He is old, he is a patriarch, he is thirty-eight! Great God! how much wretchedness may be compressed into thirty-eight years! He has outlived many of his comrades of the Rue des Cannelles. It is now his turn to lift a corner of the impenetrable veil hiding the dread features of immortality. Desbrosses calls to him from his unhonored grave, and the living must perforce listen when the dead speak. Enthusiast, adorer of Nature, singing only of spring and the spring-time of life, he was never meant to attain to its summer, much less its autumn; for poets, like the swallow and the rose, endure only for a season.

He died, and his death was terrible—a death in life. It was decomposition itself. Vein by vein, fibre by fibre, that poor writhing body descended into the grave piecemeal. What was the crime

of this candid, transparent creature, that his end should rival in terror that of the most detestable wretches of antiquity?

"I had the consolation of having seen him several times during his last short illness," writes one of his intimate friends. "He had somehow become more tender, more expansive, more amicable. He took the hands of everybody who came in, again and again, and pressed them a thousand times. 'Ah! my dear old boy!' And the hiccup, an uninterrupted and ominous hiccup, broken often by cries of pain, alone stopped his eager greetings.

"One day I came in just at the commencement of a crisis. The cries of the sufferer who was in the attic could be heard on the ground-floor. 'Ah! . . . thanks! . . . thanks! . . . You have long legs . . . go! . . . go! . . . run and fetch me some salts . . . a smelling-bottle! . . . You will bring a smelling-bottle with a wide mouth . . . go! . . . go!' And then he twisted himself about in horrible convulsions. A smelling-bottle with a wide mouth was very difficult to find; I was away quite half an hour. When I returned the crisis was not yet over. 'Ah! that's good! There's a kind fellow!' and he tore the smelling-bottle violently out of my grasp. After a long inhalation of the salts, he seized my two hands with a movement of profound gratitude, and I thought he would never let them go!"

The next morning Henri Murger was carried to the Hospital Dubois, where, three days afterward, he expired.

This man was sober, economical, with an honest horror of debt, without vices, either great or little. He did not drink; he was not a libertine. He had wit, imagination, genius. He worked like a galley-slave, and produced twelve books. And yet his pen could not bring him bread. On whom rests the blame?—*Temple Bar*.

DE PROFUNDIS.

BY ALFRED TENNYSON.

TWO GREETINGS.

I.

OUT of the deep, my child, out of the deep
Where all that was to be in all that was
Whirl'd for a million æons thro' the vast
Waste dawn of multitudinous-eddy light—
Out of the deep, my child, out of the deep,
Thro' all this changing world of changeless law
And every phase of ever-heightening life,
And nine long months of antenatal gloom,

With this last moon, this crescent—her dark orb
 Touch'd with earth's light—thou comest, darling boy ;
 Our own ; a babe in lineament and limb
 Perfect, and prophet of the perfect man ;
 Whose face and form are hers and mine in one,
 Indissolubly married like our love ;
 Live and be happy in thyself, and serve
 This mortal race thy kin so well that men
 May bless thee as we bless thee, O young life
 Breaking with laughter from the dark, and may
 The fated channel where thy motion lives
 Be prosperously shaped, and sway thy course
 Along the years of haste and random youth
 Unshatter'd, then full-current thro' full man,
 And last in kindly curves, with gentlest fall,
 By quiet fields, a slowly-dying power,
 To that last deep where we and thou are still.

II.

I.

OUT of the deep, my child, out of the deep,
 From that great deep before our world begins
 Whereon the Spirit of God moves as he will—
 Out of the deep, my child, out of the deep,
 From that true world within the world we see,
 Whereof our world is but the bounding shore—
 Out of the deep, Spirit, out of the deep,
 With this ninth moon that sends the hidden sun
 Down yon dark sea, thou comest, darling boy.

2.

For in the world, which is not ours, They said,
 "Let us make man" and that which should be man,
 From that one light no man can look upon,
 Drew to this shore lit by the suns and moons
 And all the shadows. O dear Spirit half-lost
 In thine own shadow and this fleshly sign
 That thou art thou—who wailest being born
 And banish'd into mystery, and the pain
 Of this divisible-indivisible world
 Among the numerable-innumerable
 Sun, sun, and sun, thro' finite-infinite space
 Finite-infinite time—our mortal veil
 And shatter'd phantom of that infinite One,
 Who made thee unconceivably thyself
 Out of His whole World-self and all in all—
 Live thou, and of the grain and husk, the grape
 And ivyberry, choose ; and still depart
 From death to death thro' life and life, and find
 Nearer and ever nearer Him who wrought
 Not Matter, nor the finite-infinite,
 But this main miracle, that thou art thou,
 With power on thine own act and on the world.

THE HUMAN CRY.

I.

HALLOWED be Thy name—Halleluiah !—
 Infinite Ideality !
 Immeasurable Reality !
 Infinite Personality !
 Hallowed be Thy name—Halleluiah !

II.

We feel we are nothing—for all is Thou and in Thee ;
 We feel we are something—*that* also has come from Thee ;
 We are nothing, O Thou—but Thou wilt help us to be.
 Hallowed be Thy name—Halleluiah !

—*The Nineteenth Century.*

AN ESCAPE FOR LIFE FROM A FIJIAN CYCLONE.

SAVU SAVU BAY, THE FIJI ISLES,
 15th December, 1879.

MY DEAR FATHER AND MOTHER : I arrived here only yesterday morning from Levuka, and very very glad I am to get safe home at last, for we were shipwrecked on the way, and had to swim for our lives ; it was a terrible time. I suffered all the awful horrors of a death by drowning, but my life has been preserved, I may truly say, in a wonderful manner. I don't know how to write about it ; I am so full of thankfulness that you have been spared what I know would have been a great sorrow to you all ; just simply rejoice that I am still to the fore, a good deal battered about, but safe and sound, and as well in health as ever, thank God for that. But I had better begin at the beginning, and give an account of the whole affair. I left Levuka last Tuesday morning, the 9th, at daylight, in a cutter of nine tons, the owner and captain in charge, his name H——, a man of few words, a quiet, honest, trustworthy fellow, for whom I have a great liking, thoroughly up to his work. As crew we had a half-caste and two strong Fijians, only one other passenger besides myself. This man, A——, was formerly captain in some merchant service, a very rough diamond, but at bottom a very good fellow ; he came to Fiji about ten years ago, and is now a gray-haired old fellow, with a wife and large family of children. H—— is in partnership with

C——, in Savu Savu Bay, brother to the one you know. They bought this cutter a few months ago, and have been running her regularly ever since.

We left Levuka, as I have said, at daylight last Tuesday, with a very light breeze. We made very little way that day, and anchored for the night close to an island. Next morning at daylight we started again ; what little breeze there was in our favor, but by evening it had died away, and left us out in the open sea. All that night we kept bobbing on. As soon, however, as day dawned, we saw at once we were in for something hot—at all events a very heavy squall was coming on—so we took in all our extra sails, and reefed close down, not a bit too soon. A terrific storm of wind and rain struck us, sending the cutter almost over on to her beam ends ; we feared our two small sails would be blown clean away, but being new and strong they held, to our great relief. At first we thought we were only in for a very heavy squall, which would not last more than two or three hours, but instead of that it increased in fury, and so rapidly, that within half an hour it was blowing a perfect hurricane, and, as we have since found out, a regular cyclone. I have seldom seen such a sight ; I never wish to experience it again in such a small craft. Our cutter of nine tons, in ordinary sailing weather, always boasted of five sails—a mainsail, square-sail, gaff-

topsail, stay-sail, and jib. We took in everything except the mainsail and jib, both of which we shortened as much as possible, and yet we lay over with our lee gunwale under water the whole time. At first the sea was comparatively smooth, for the wind was so strong that it literally prevented the sea from rising; it seemed at first that it was impossible for the waves to lift, for if one attempted to do so the wind caught it and sent it hissing along in spray; we were almost blinded with the heavy rain and spray; and although seven o'clock in the morning, it became quite dark, and we were enveloped in a thick fog, and could only see a few yards ahead.

The storm came up from the eastward, but soon shifted round to the N.E., right dead ahead in our teeth; we then decided to try and make for the shelter of a small rocky barren islet, for we were out in the open sea, and this was our only refuge. We steered by compass, for we could not see any distance ahead. H—— steered, A—— went up to the masthead, and Lui, the half-caste, and the two Fijians stood ready. As there were plenty of men to do what was wanted, I remained close to H——, to lend him a hand if necessary. We were of course drenched all the time with the heavy rain and spray, but that was nothing. To reach the island we had to pass through some dangerous reef patches, lying a mile and a half from it, the passage through the reef, only a very narrow one, being but a few yards wide. Not one of us spoke a word; I knew afterward that we were all thinking the same thing, that it was indeed very doubtful whether any of us would see land again. We were close-hauled to endeavor to get as much as possible to windward of the passage, and we were anxious to get through before the wind shifted round any more. After a long time A—— cried out that we were close upon the reef; there it was, a white seething mass of huge waves and foam. I looked at H——, his honest brown face as white as a sheet, and with such a desperate look upon it; we all saw at once that it was impossible to make the passage, close-hauled though we were, on that tack. There was not a second to be lost; we were almost on the reef; H—— tried to put the cutter

about, she missed stays; we could not get her round; and the next moment we were broadside on among the huge waves and white foam right on the reef, which here is some fifty to sixty yards wide; an awful sea was running, and we were tossed up and down like a cockle-shell. A—— at the masthead roared out his orders in a hoarse voice of agony, "Luff, luff! keep her full! luff, luff! keep her full!" and in that way we literally dodged between the huge rocks until we reached the deep water beyond. Our escape was a most miraculous one; at one time if we had been in the trough of the sea instead of on the top of huge wave, we must have all lost our lives. When we were safe in the open sea again A—— came down from the masthead, his face very white, and said to me, "Sonny, I would not have given 5s. for any of our lives a minute ago." I looked at old H——, he was nearly crying with thankfulness.

That danger over, we had another difficulty before us—how to reach the island; for the wind was gradually hauling round, and was again blowing dead ahead, and a tremendous sea was running. After tacking and tacking with the greatest difficulty, we reached holding-ground on the lee side of our barren island, and threw out both anchors and sixty-five fathoms of chain. Lui and the Fijians went ashore in the boat to cook; she returned for A——, who also went ashore. H—— and I remained on board, not anticipating any danger. This was at nine o'clock in the morning. Soon after A—— left us the wind went round to the northward, and instead of our being on the lee side of the island, we were now on the windward side, exposed to the full fury of the gale; it was impossible then for the boat to return to us; the sight was a grand one, and believing that our chains would hold, and not dreaming that there was any danger, I thoroughly enjoyed it.

Where the boat had gone ashore was a narrow strip of white sand, with a background of trees, the rest of the island nothing but bluff barren rocks, rising straight out of the water; a tremendous sea was rolling in, and dashing furiously against these rocks, striking them and rising high in the air a mass of white foam; the trees on the island

in their new spring foliage forming a beautiful contrast. H—— said to me, "What an iron-bound coast." I made some remark, I think, that it was very grand; and H—— said, "Yes, old man, but I pity the poor fellow who gets dashed up against those rocks."

Meanwhile the storm was increasing rapidly in fury, the cutter dipping bows under to every wave, the spray flying clean over us. We went down below into the little cabin and had something to eat, a biscuit and salt beef. It was impossible for the boat to come out to us; nothing could have lived in the heavy sea, so we were obliged to remain on board, the storm raging worse and worse. A little before three o'clock in the afternoon I went down below, for I was very cold and wet. I was down but a few minutes, when H—— called to me, "Old man, stand by to swim, one chain has parted!"

The tone of his voice was quite enough. I did not say a word; I *felt* the worst had come; I went on deck at once; there was H——, with nothing but his shirt on, his face very white, and with the same look on it that I had noticed when were *on* the reef. I went to the bows, and of course saw at once that one chain had gone. I said to H——, "Let us lash two oars together, and get ashore on them." He said, "Not a bit of use, you will only be drifted upon those rocks; your only chance is to swim, and try and make for that bit of sandy beach. It is your only chance, old man; if you get upon those rocks you will be dashed to pieces." Now, in order to reach that sandy beach we had to swim in a great measure against wind, waves, and tide. I merely said, "I suppose we had better go before the other chain parts." He said, "Yes, if you wait till then you will have less chance." I did not say another word. I stripped my clothes off. As I was taking my shirt off H—— said, "You had better keep that on; you will want something on shore. But I took it off, for I knew I could not swim in it; I, however, kept my jersey on, and there I stood ready. We both stood together hanging on to the shrouds, both of us silent, for a minute or two, very quiet, and our faces—for mine must have been the same as

H——'s—very white. I looked at the huge breakers, at the rocks, at the distance from the strip of beach, and I felt my heart sink terribly. I did not say a word, but I felt I could not reach the shore; there was no time for any cowardice. H—— told me afterward that I did not show the slightest fear, that he never saw any one behave in such a cool manner as I did. Just before I jumped into the sea I turned round to H——, and said, "Old man, I can't do it." The next moment I was among the waves, swimming for the shore. I kept up my presence of mind grandly. I swam slowly and deliberately, for I knew I stood a poor chance if I flurried myself. I heard H—— plunge into the sea behind me; he soon passed me, swimming with far greater ease than I did; he is much more powerfully built than I am, stronger in every way, and has led a very rough life since his boyhood; he stood a far better chance of reaching the shore than I did. It was terrible work among those huge breakers; they followed each other in such quick succession, that when you did manage to rise to the surface after being overwhelmed with one, you had not time even to breathe before the next huge wave was upon you. I was getting very exhausted, my arms and legs so tired that I could hardly move them, and I found it more difficult to rise from under the waves. I saw A—— (who cannot swim a stroke) on the beach gesticulating and running about frantically. I saw H—— far ahead of me, still making good way; then I saw Lui, the half-caste, a perfect Hercules in strength, and a splendid swimmer, dash into the water followed by the two Fijians. I saw them reach H——; one Fijian remained with him to help him, and Lui and the other came on toward me. It seemed child's play to them; the breakers were rolling in toward the shore; as they met each one they dived under it, and so they came on to me. I was afraid they would not reach me in time, for I was completely exhausted. I had no strength left in me, and I gave an awful yell, and sank before they reached me. When I came to the surface, I found myself almost unconsciously between them, my left hand on Lui's shoulder, my right arm held up by the Fijian.

We made for the shore ; in a second a huge breaker was upon us, and separated us.

A——, who was watching from the beach, says he thought none of us would come to the surface again, we were so long beneath the waves ; however, we came to the surface again, and Lui and the Fijian grasped me again ; a huge wave separated us again, again we came together, and made a vain attempt. Lui said *Sa oti* (" It is finished"), shook me off and made for the shore followed by the Fijian. I then heard a yell from H——, the Fijian who came out to help him had deserted him also. When Lui said, *Sa oti*, and the two men left me, the agony of mind I suffered is something indescribable ; I gave up all hope of life, I was utterly exhausted, and down I sank. I heard the breakers roaring above me, I could just see my arms moving feebly about, my stomach began to swell most painfully with the amount of salt water I was swallowing, and then in the most unaccountable manner I came to the surface again, and saw them dragging H—— ashore. Down I sank again, and so on, until at last I felt dashed against the rocks. I grasped at them, but they were smooth and slippery, and back I was sucked again by the waves ; the next wave threw me up again, and I felt a hand clutch hold of me and drag me higher up ; I fully realized then how a drowning man grasps at every straw ; the wave *flattened* both of us against the rock, which rose sheer above us ; I clutched at it in a helpless kind of way, and most mercifully three fingers of each hand stuck in two small niches in the rock ; I could only get them in as far as the first joint, no more ; how I held on is a marvel to me, a marvel to every one who saw the place afterward. The next wave lifted me clean off my feet, and towered high above us ; how my fingers retained their hold I cannot tell, it was pure desperation ; as the wave receded the suction was very great, it washed the Fijian, who had saved me, back again among the breakers. I looked round for an instant, and saw him struggling in the water, but the next wave was upon me, a huge body of water, and I held on again like grim death ; my strength was gone, my arms and legs numb, but I did not leave go : the wave

washed the Fijian into a small hole in the rock hollowed out by the action of the water ; into this the waves swept with fearful force ; but the Fijian was fresh, and stuck there. After a while he clambered round the rocks, how I don't know, and went for help ; he saw A—— and shouted to him for a rope, he (A——) chopped off the boat's painter with an axe, and sent Lui and the Fijians over the rocks to me. They came down from above, and let the rope down to me in a noose ; it was too short—they called and yelled to me to catch hold of it, but I could not, I had no strength left ; they let it down a little lower, it was now about two feet above me ; I waited for the next wave, it lifted me up, I made one desperate effort and caught hold of the rope ; they dragged me up to a small ledge, where there was just room for them to stand ; they seized me by the wrists and legs, and there I vomited a quantity of blood and water ; after a while they dragged me up higher to another ledge ; as they were doing so, the cutter, which had in the mean time parted the remaining chain, was dashed against the rocks, her topmast striking the rocks within a few feet of me. Well, they dragged me up from ledge to ledge until we got to a safe place, and there I lay and vomited bucketfuls. The Fijians seeing I was numb with the cold, lay upon me with their naked bodies like blankets until I had got some warmth into me, they then between them carried me down to the beach into a sort of cave. A—— came up, and never shall I forget the rough fellow's tender kindness to me. " Old man, old man, I never thought I should see you again ; I told H—— long ago that you were cooked. Lui and the Fijians when they came ashore said it was impossible to save you, that you were a drowned man, that it was written on your face, that they themselves were nearly drowned, that the sharks were already at you." A—— fortunately had brought a rug ashore with him in the boat ; he stripped off my wet jersey, took off his own dry fisherman's blue jersey, made me put it on, and wrapped me in his rug, and made the Fijians light a fire, and I lay close alongside. It was quite dark then—just think how awful it would have been if the storm had come upon us during the

night. The shake of the hand old A—— gave me when he first saw me I shall never forget. Soon H—— came limping up; we said nothing at first, but just looked at each other in quiet thankfulness. He then told me he had never had such a narrow squeak for his life before, that he also gave up all hope, and yet I saw him dragged ashore. A—— told me that they all rushed into the water and dragged him ashore, and that when he saw his face he gave up all hope of ever seeing me again, for H——'s face was like a corpse's, his lips livid.

That night, when the tide went down, A——, Lui, and the Fijians went to the cutter to get some food and water, for we were on a barren island without either; although the waves were dashing over the cutter, they pluckily dived into her hold and brought up a box of tinned meats and a bag of flour belonging to me; they also secured a keg of water, so we were fortunately provided with provisions for a week. This was all that could be done then; the seas had broken open the hatches, and were washing the cargo out in the most merciless way. That night the wind went right round to the southward, and then gradually to the eastward, proving that we had experienced a regular cyclone. The gale raged all night, and we never expected to see the cutter in the morning. We none of us slept that night, but we all lay down; an oar served us three for a pillow. A—— and H—— put me between them; no clothes had been saved from the wreck. A—— had fortunately his rug; we lay as close to each other as we possibly could, I close up to H——'s back, and A—— close up to mine with his arm round me. How bitterly cold it was, how the wind did roar! I could not sleep, my chest was paining me too much; I said, "I can't breathe." H—— said, "I am just the same, every breath I take pains me." I suppose this was the result of the quantity of salt water we had swallowed. We were very thankful when morning at last dawned. H—— and I could not move; his legs were much cut about, but I was in a far worse state. When they hauled me over the rocks I was bleeding, I may truly say, all over; it was a great mercy no limbs were broken. I was cut all over,

my feet and legs terribly; when H—— and A—— looked me over next morning, they said, "By Jove, old man, you would make a splendid zebra." I was afraid at first that my left knee was seriously damaged, for I could not move it, my feet were much swollen, and I had an ugly cut in my groin. My wounds were all full of dirt; there was no water to wash in, for we had but very little for drinking purposes, and it was necessary to husband that very carefully, for we did not know when we might be rescued. However, I bore all with the greatest cheerfulness—everything seemed so utterly trivial when I thought how mercifully my life had been spared. That night, as I lay awake, a feeling of utter horror came over me when I thought of what I had gone through, and then it would change to intense thankfulness that I was still safe and sound in limb. A—— told me that I was at least three quarters of an hour in the water, and two hours upon the rocks, so you can imagine what I endured.

When I gave up all hope in the water, I did not suffer one pang of remorse about my past life. I have always been told that when a man is drowning all his past life comes before him, and he suffers horrors of conscience; it was not so with me. I thought of you, my dear father and mother, and of you all at home, and what a sorrow the news of my death would be to you all, and then, strange to say, I thought how people do lie; I have always been told that death by drowning is the easiest death, and yet here I am suffering agonies of pain, and I remember wishing if I am to be drowned, let it be done quickly. Then I thought, I am about to solve the problem about the future world, and I felt the same feeling of shyness and dread come over me that I have felt so often, and never could conquer, when I was outside a drawing-room door, and about to be ushered into the presence of a crowd of ladies and men. I have been asked if I never thought about the sharks which infest the place. I am thankful to say they never entered into my head; if I had remembered them I feel sure I should have gone down like a stone.

Next morning the cutter, to our great surprise, was still there; when she had

drifted ashore it was high tide, and the waves wedged her in between the rocks most securely ; twenty yards beyond the place where she struck, and she would have missed the island altogether, and been driven clean away ; she came ashore at the very place where I did, thus showing how helplessly the wind and waves had driven me ; twenty yards more and I should have been lost.

During the day the wind and waves went down ; the trees whose tender foliage I had admired the day before looked as if a severe fire had passed through them, the leaves were all black and withered. I was bringing up a large stock of stores and necessaries for the plantation ; remnants only saved, a quantity of silver for plantation use gone, my good heavy coats that are invaluable on these voyages all washed away, cases broken open by the waves, and some of the contents washed ashore ; even tinned meats strewn about on the reef ; sulus (cloth for plantation use) found in strips all over the reef ; my belt was picked up three days afterward. I cannot tell the extent of my loss at present ; but I look upon it as nothing when I think how wonderfully my life has been spared.

The third day the sea was almost calm. On Saturday a schooner came in sight ; we hailed her, and she lent us men. All ballast was taken out of the cutter, two strong tackles rove to the reef, the holes in her were then patched up, and at high tide she was hauled into deep water, and by constant pumping kept afloat. The schooner lent her an

anchor and chain. Then it was decided that I should go on in the schooner to Savu Bay to break the news to H——'s partner, and send down a letter to A——'s wife to tell her that her husband was all right, for we knew that everybody would be very anxious about us. So I came on in the schooner and reached this full of thankfulness.

My wounds are showing no signs of festering ; they cannot look more healthy. How I relished my first wash ! My feet are so much cut about that I cannot do much walking at present, but I am in perfect health ; the difficulty I suffered at first in breathing has entirely left me, so do not be in the least alarmed about me.

I shall give the Fijian who saved my life a handsome present ; he indeed deserves one, although he did not come with the intention of saving my life ; he said to A——, " I must go and see the white man die," and ran to the top of the rocks to get a good view. He saw I had life in me yet, and pluckily clambered down the rocks. How he found a footing I don't know, but Fijians are as sure-footed as goats ; at all events he got down in time to seize my hand and save my life.

I have written this letter in a great hurry, and at one sitting, so I am pretty well tired out ; but I have a chance of sending to Levuka to-morrow ; possibly I may not have another before the mail leaves. Your affectionate Son.—*Macmillan's Magazine*.

WHITE WINGS: A YACHTING ROMANCE.

BY WILLIAM BLACK.

CHAPTER XXXII.

A CONFESSION.

WHAT could the solitary scouts, coming back from the various points of the island, know of this quick, unwilling cry of pain, and of the forced calm that followed it ? They had their own sorrows. There was a gloom upon their faces. One and all bore the same story—not a seal, not a wild duck, not even a rock pigeon anywhere.

" But it is a fine thing to be able to

straighten one's back," says the Laird, who always seizes on the cheerful side ; " and we have not given up hope of your getting the sealskin yet, Miss Mary—no, no. The Doctor says they are away hunting just now ; when the tide gets low again they will come up on the rocks. So the best thing we can do is to spend plenty of time over our luncheon, and cross the island again in the afternoon. Aye ; begun already ?" adds the Laird, as he goes up to the canvas, and regards the rough outlines in char-

coal with a critical air. "Very good! very good!" he says, following the lines with his thumb, and apparently drawing in the air. "Excellent! The composition very clever indeed—simple, bold, striking. And a fine blaze of color ye'll have on a day like this; and then the heavy black hull of the smack bang in the foreground: excellent, excellent! But if I were you, I would leave out that rock there; ye would get a better sweep of the sea. Don't distract the eye in sea pieces; bold lines—firm, sound color: and there ye are. Well, my lass, ye have the skill of constructing a picture. Tom Galbraith himself would admit that, I know—"

But here the Laird is called away by his hostess.

"I would advise you, sir," says she, "to have some luncheon while you can get it. It is a very strange thing, with all you gentlemen on board, and with all those guns lying about, but we are drawing nearer and nearer to starvation. I wish you would give up hunting seals, and shoot something useful."

Here our young Doctor appears with certain bottles that have been cooling in the water.

"There must be plenty of rock pigeons in the caves we passed this morning, on the other island," he says.

"Oh, not those beautiful birds!" says she of the empty larder. "We cannot have Hurlingham transported to the Highlands."

"Whoever tries to shoot those pigeons won't find it a Hurlingham business," he remarks.

But the Laird has a soul above lunches, and larders, and pigeon-shooting. He is still profoundly absorbed in thought.

"No," he says, at length, to the young lady, who, as usual, is by his side, "I am wrong!"

She looks up at him with some surprise.

"Yes, I am wrong," he says decisively. "Ye must keep in that island. Ye must sacrifice picturesqueness to truth. Never mind the picture: keep the faithful record. In after life ye will be able to get plenty of pictures; but ye may not be able to get an exact record

of the things ye saw when ye were sailing with the White Dove."

"Well, you know, sir," observes Miss Avon, with a somewhat embarrassed smile, "you don't give me much encouragement. You always speak as if I were to be compelled to keep those sketches. Am I to find nobody silly enough to buy them?"

Now, somehow or other of late, the Laird has been more and more inclined to treat this sale of Mary Avon's pictures as a most irresistible joke. He laughs and chuckles at the mere mention of such a thing, just as if Homesh were somewhere about.

"Sell them!" he says with another deep chuckle. "Ye will never sell them. Ye could not have the heart to part with them."

"The heart has to be kept in proper subjection," says she lightly, "when one has to earn one's living."

Queen Titania glances quickly at the girl; but apparently there is no profound meaning concealed in this speech. Miss Avon has taken her seat on a shelving piece of gray rock; and, if she is concerned about anything, it is about the safety of certain plates and knives and such things. Her hand is quite steady as she holds out her tumbler for the Youth to pour some water into the claret.

Luncheon over, she returns to her work; and the band of seal hunters, taking to cigars and pipes, sit and watch the tide slowly ebb away from the golden-brown seaweed. Then, with many a caution as to patience and silence, they rise and get their guns and set out. Already there is a disposition to slouch the head and walk timidly; though as yet there is no need of any precaution.

"*Glückliche Reise!*" says Miss Avon, pleasantly, as we pass.

Angus Sutherland starts, and turns his head. But the salutation was not for him; it was meant for the Youth, who is understood to be the most eager of the seal hunters. And Mr. Smith, not having his answer pat, replies, "I hope so;" and then looks rather confused as he passes on, carefully stooping his head, though there is no occasion whatever.

Then, by following deep gullies and crawling over open ledges, we reach points commanding the various bays; and with the utmost caution peer over or round the rocks. And whereas yesterday, being Sunday, the bays were alive with seals, disporting themselves freely in full view of a large party of people who were staring at them, to-day, being Monday, finds not a seal visible anywhere, though every one is in hiding, and absolute silence must have reigned in the island, ever since the lobster fishers left in the morning. No matter; the tide is still ebbing; the true hunter must possess his soul.

And yet this lying prone for hours on a ledge of exceedingly rough rock must have been monotonous work for our good friend the Laird. Under his nose nothing to look at but scraps of orange lichen and the stray feathers of sea birds; abroad nothing but the glassy blue sea, with the pale mountains of Jura rising into the cloudless sky. At last it seemed to become intolerable. We could see him undergoing all sorts of contortions in the effort to wrest something out of his coat-pocket without raising any portion of his body above the line of cover. He himself was not unlike a gray seal in the shadow of the rock, especially when he twisted and turned himself about without rising an inch from the surface. And in time he succeeded. We could see him slowly and carefully unfold that newspaper—probably not more than a week old—just beneath his face. He had no need of spectacles: his eyes were almost touching the page. And then we knew that he was at rest; and the hard rock and the seals all forgotten. For we took it that this local paper was one which had written a most important leading article, about the proposed public park for Strathgovan, calling upon the ratepayers to arise and assert their rights and put a check on the reckless extravagance of the Commissioners. The Laird himself was openly pointed at as one who would introduce the luxury of the later Romans into a sober Scotch community; and there were obscure references to those who seemed to consider than a man's dwelling-house should become nothing more nor less than a museum of pictures and statues, while they would apply taxes

raised from a hard-working population in the adornment of places of recreation for the idle. But do you think that the Laird was appalled by this fierce onslaught? Not a bit of it. He had read and re-read it to us with delight. He had triumphantly refuted the writer's sophistries; he had exposed his ignorance of the most elementary facts in political economy; he was always rejoiced to appear before Tom Galbraith and Mary Avon as one who was not afraid to suffer for his championship of art. And then, when he had triumphed over his enemy, he would fold the paper with a sort of contented sigh, and would say, with a compassionate air, "Poor crayture! poor crayture!" as if the poor crayture could not be expected to know any better.

At last—at last! The Laird makes frantic gestures with his newspaper—all the more frantic that they have to be strictly lateral, and that he dare not raise his hand. And behold! far away out there on the still, blue surface, a smooth round knob, shining and black. Without a muscle moving, eager eyes follow that distant object. The seal is not alarmed or suspicious; he sails evenly onward, seldom looking to right or left. And when he disappears there is no splash; he has had enough of breathing; he is off for his hunting in the deep seas.

What is more, he remains there. We catch no further trace of him, nor of any other living thing around those deserted bays. Human nature gives in. The Youth gets up, and boldly displays himself on a promontory, his gun over his shoulder. Then the Laird, seeing that everything is over, gets up too, yawning dreadfully, and folds his newspaper, and puts it in his pocket.

"Come along!" he calls out. "It is no use. The saints have taught the seals tricks. They know better than to come near on a working day."

And so presently the sombre party sets out again for the other side of the island, where the gig awaits us. Not a word is said. Cartridges are taken out; we pick our way through the long grass and the stones. And when it is found that Miss Avon has roughed in all that she requires of her present study, it is gloomily suggested that we might go back by way of the other island, that so

happily we might secure the materials for a pigeon pie before returning to the yacht.

The evening sun was shining ruddily along the face of the cliffs as we drew near the other island; and there was no sign of life at all about the lonely shores and the tall caves. But there was another story to tell when, the various guns having been posted, the Youth boldly walked up to the mouth of the largest of the caves, and shouted. Presently there were certain flashes of blue things in the mellow evening light; and the sharp bang! bang! of the gun, that echoed into the great hollows. Hurlingham? That did not seem much of a Hurlingham performance. There were no birds standing bewildered on the fallen trap, wondering whether to rise or not; but there were things coming whizzing through the air that resembled nothing so much as rifle bullets with blue wings. The Youth, it is true, got one or two easy shots at the mouth of the cave; but when the pigeons got outside and came flashing over the heads of the others the shooting was, on the whole, a haphazard business. Nevertheless, we got a fair number for Master Fred's larder, after two of the men had acted as retrievers for three quarters of an hour among the rocks and bushes. Then away again for the solitary vessel lying in the silent loch, with the pale mists stealing over the land, and the red sun sinking behind the Jura hills.

Again, after dinner, amid the ghostly grays of the twilight, we went forth on another commissariat excursion, to capture fish. Strange to say, however, our Doctor, though he was learned on the subject of flies and tackle, preferred to remain on board: he had some manuscript to send off to London. And his hostess said she would remain, too; she always has plenty to do about the saloon. Then we left the White Dove and rowed away to the rocks.

But the following conversation, as we afterward heard, took place in our absence:

"I wished very much to speak to you," said Angus Sutherland, to his hostess, without making any movement to bring out his desk.

"I thought so," said, she not without a little nervous apprehension.

And then she said quickly, before he could begin,

"Let me tell you at once, Angus, that I have spoken to Mary. Of course, I don't wish to interfere; I wouldn't interfere for the world; but—that I only asked her, lest there should be any unpleasant misapprehension, whether she had any reason to be offended with you. 'None in the least,' she said. She was most positive. She even seemed to be deeply pained by the misunderstanding; and—and wished me to let you know; so you must dismiss that from your mind any way."

He listened thoughtfully, without saying anything. At last he said,

"I have determined to be quite frank with you. I am going to tell you a secret—if it is a secret—"

"I have guessed it," she said quickly, to spare him pain.

"I thought so," he said, quite quietly. "Well; I am not ashamed of it. I have no reason to be ashamed of it. But, since you know, you will see that it would be very embarrassing for me to remain longer on board the yacht if—if there was no hope—"

He turned over the leaves of a guide-book rapidly, without looking at them; the hard-headed doctor had not much command over himself at this moment.

"If you have guessed, why not she?" he said, in a somewhat hurried and anxious manner. "And—and—if I am to go, better that I should know at once. I—I have nothing to complain of—I mean I have nothing to reproach her with—if it is a misfortune, it is a misfortune—but—but she used to be more friendly toward me."

These two were silent. What was passing before their minds? The long summer evenings in the far northern seas, with the glory dying in the west; or the moonlight walks on the white deck, with the red star of Ushinish lighthouse burning in the south; or the snug saloon below, with its cards, and candles, and laughter, and Mary Avon singing to herself the song of Ulva? She sang no song of Ulva now.

"Mary and I are very intimate friends," says the other deliberately. "I will say nothing against her. Girls have curious fancies about such things sometimes. But I must admit—for you

are my friend, too—that I am not surprised you should have been encouraged by her manner to you at one time, or that you should wonder a little at the change.”

But even this mild possibility of Mary Avon's being in the wrong she feels to be incompatible with her customary championship of her friend; and so she instantly says,

“Mind, I am certain of this—that whatever Mary does, she believes to be right. Her notion of duty is extraordinarily sensitive and firm. Once she has put anything before her as the proper thing to be done, she goes straight at it; and nothing will turn her aside. And although there is something about it I can't quite understand, how am I to interfere? Interference never does any good. Why do not you ask her yourself?”

“I mean to do so, when I get the chance,” said he simply. “I merely wished to tell you that if her answer is ‘No,’ it will be better for me to leave you. Already I fancy my being on board the yacht is a trouble to her. I will not be a trouble to her. I can go. If it is a misfortune, there is no one to blame.”

“But if she says ‘Yes!’” cried his friend; and there was a wonderful joy in her eyes, and in her excess of sympathy she caught his hand for a moment. “Oh, Angus, if Mary were to promise to be your wife! What a trip we should have then—we should take the White Dove to Stornoway!”

That was her ultimate notion of human happiness—sailing the White Dove up to Stornoway!

“I don't think there is much hope,” said he rather absently, “from her manner of late. But anything is better than suspense. If it is a misfortune, as I say, there is no one to blame. I had not the least notion that she knew Mr. Howard Smith in London.”

“Nor did she.”

He stared rather.

“They may have met at our house, but certainly not more than once. You see, living in a country house, we have to have our friends down in a *staccato* fashion, and always by arrangement of a few at a time. There is no general dropping in to afternoon tea.”

“He never met her in London?” he repeated.

“I should think not.”

“His uncle, then: did she never see him before?”

“Certainly not.”

“Then what does he mean by treating her as a sort of familiar friend who was likely to turn up any time at Denny-mains?”

His companion colored somewhat; for she had no right to betray confidences.

“The Laird is very fond of Mary,” she said evasively. “It is quite beautiful to see those two together.”

He sat for a little time in silence, and then begged to be excused—he would go on deck to smoke. But when, some little time thereafter, we returned from our brief fishing, the dark figure walking up and down the deck was not smoking at all. He paused as the gig was hauled fast to the gangway.

“What luck?”

“About two dozen.”

“All lithe?”

“About half a dozen mackerel.”

And then he assisted Mary Avon to ascend the small wooden steps. She said ‘Thank you!’ as she withdrew her hand from his; but the words were uttered in a low voice, and she instantly crossed to the companion and went below. He stayed on deck, and helped to swing the gig up to the davits.

Now something had got into the head of our Admiral-in-chief that night. She was very merry, and very affectionate toward Mary. She made light of her foolish wish to go away to the south. She pointed out that this continuous fine weather was only hoarding up electricity for the equinoctials; and then we should have a spin!

“We are not going to let you go, Mary; that is the long and the short of it. And we are going to keep hold of Angus, too. He is not going away yet—no, no. We have something for him to do. We shall not rest satisfied until we see him sail the White Dove into Stornoway harbor!”

CHAPTER XXXIII.

ONLY A HEADACHE.

STORNOWAY harbor, indeed! The weather was laughing at us. The glass

had steadily fallen until it had got about as low as it could go with decency; and yet this next morning was more beautiful, and bright, and calm than ever! Were we to be forever confined in this remote Loch of the Burying Place?

"Angus! Angus! where are you?" the Admiral calls out, as she comes up on deck.

"Here I am," calls out a voice in return, from the cross-trees.

She raises her head, and perceives the ruddy-faced doctor hanging on by the ratlines.

"Where is the fine sailing weather you were to bring us—eh?"

"I have been looking for it," he replies, as he comes down the rigging; "and there is not a breath anywhere."

"Very well," she says promptly; "I'll tell you what you must do. You must get everybody who can handle a gun into the gig and go away up to the head of the loch there, and shoot every living thing you can see. Do you understand? We are on the brink of starvation! We are perishing! Do you want us to boil tarred rope into soup?"

"No," he says humbly.

"Very well. Away you go. If you can't bring us any wind to take us into a civilized place, you must provide us with food; is that clear enough?"

Here Captain John comes aft, touching his cap.

"Good-morning, mem! I was never seeing the like of this weather, mem."

"I don't want to see any more of it," she says sharply. "Did you bring us in here because there was a convenient place to bury us in? Do you know that we are dying of starvation?"

"Oh, no, mem!" says Captain John, with a grin, but looking rather concerned all the same.

However, her attention is quickly called away by the sound of oars. She turns and regards this small boat approaching the yacht; and the more she looks the more do her eyes fill with astonishment.

"Well, I declare!" she says. "This is about the coolest thing I have seen for ages."

For it is Miss Mary Avon who is rowing the dingy back to the yacht; and her only companion is the Youth, who

is contentedly seated in the stern, with his gun laid across his knees.

"Good-morning, Mr. Smith!" she says, with the most gracious sarcasm. "Pray don't exert yourself too much. Severe exercise before breakfast is very dangerous."

The Youth lays hold of the rope; there is a fine blush on his handsome face.

"It is Miss Avon's fault," he says; "she would not let me row."

"I suppose she expected you to shoot? Where are the duck, and the snipe, and the golden plover? Hand them up!"

"If you want to see anything in the shape of game about this coast, you'd better wait till next Sunday," says he, somewhat gloomily.

However, after breakfast, we set out for the shallow head of the loch, and things do not turn out so badly after all. For we have only left the yacht some few minutes when there is a sudden whirring of wings—a call of "Duck! duck!"—and the doctor, who is at the bow, and who is the only one who is ready, fires a snap-shot at the birds. Much to everybody's amazement, one drops, and instantly dives. Then begins an exciting chase. The *biorlinn* is sent careering with a vengeance; the men strain every muscle; and then another cry directs attention to the point at which the duck has reappeared. It is but for a second. Though he cannot fly, he can swim like a fish; and from time to time, as the hard pulling enables us to overtake him, we can see him shooting this way or that through the clear water. Then he bobs his head up, some thirty or forty yards off; and there is another snap-shot—the charge rattling on the water the fifth part of an instant *after* he disappears.

"Dear me!" says the Laird; "that bird will cost us ten shillings in cart-ridges!"

But at last he is bagged. A chance shot happens to catch him before he dives; he is stretched on the water, with his black webbed feet in the air; and a swoop of Captain John's arm brings him dripping into the gig. And then our natural history is put to the test. This is no gay-plumaged shel-drake, or blue-necked mallard, or saw-

toothed merganser. It is a broad-billed duck, of a sooty black and gray; we begin to regret our expenditure of cartridges; experiments on the flavor of unknown sea-birds are rarely satisfactory. But Captain John's voice is authoritative and definite. "It is a fine bird," he says. And Master Fred has already marked him for his own.

Then among the shallows at the head of the loch there is many a wild pull after broods of flappers, and random firing at the circling curlew. The air is filled with the calling of the birds; and each successive shot rattles away with its echo among the silent hills. What is the result of all this noise and scramble? Not much, indeed; for right in the middle of it we are attracted by a strange appearance in the south. That dark line beyond the yacht; is it a breeze coming up the loch? Instantly the chase after mergansers ceases; cartridges are taken out; the two or three birds we have got are put out of the way; and the Laird, taking the tiller ropes, sits proud and erect. Away go the four oars with the precision of machinery; and the long sweep sends the gig ahead at a swinging pace. Behold! behold! the dark blue on the water widening! Is it a race between the wind and the gig as to which will reach the White Dove first?

"Give me your oar, Fred!" says the doctor, who is at the bow.

There is but a momentary pause. Again the shapely boat swings along; and with the measured beat of the oars comes the old familiar chorus:

Cheerily, and all together!—
Ho, ro, clansmen!
A long, strong pull together!—
Ho, ro, clansmen!
Soon the flowing breeze will blow;
We'll show the snowy canvas on her—
Ho, ro, clansmen!
A long, strong pull together!—
Ho, ro, clansmen!
Wafted by the breeze of morn
We'll quaff the joyous horn together!—
Ho, ro, clansmen!
A long, strong pull together!—
Ho, ro, clansmen!

"We'll beat! we'll beat!" cries the Laird, in great delight. "Give it her, boys! Not one halfpennyworth o' that wind will we lose!"

The bow cleaves the blue water; the

foam hisses away from her rudder. It is a race of the North against the South. Then the chorus again:

Ho, ro, clansmen!
A long, strong pull together!—
Ho, ro, clansmen!

Hurrah! hurrah! As the gig is run alongside, and guns and birds handed up, that spreading blue has not quite reached the yacht; there is no appreciable stir of the lazy ensign. But there is little time to be lost. The amateurs swing the gig to the davits, while the men are getting in the slack of the anchor chain; the women are incontinently bundled below, to be out of the way of flapping sheets. Then, all hands at the halyards! And by the time the great white wings are beginning to spread, the breeze stirs the still air around us; and the peak sways gently this way and that; and they who are hard at work at the windlass are no doubt grateful for this cool blowing from the south. Then there is a cessation of noise; we become vaguely aware that we are moving. At last the White Dove has spread her wings; her head is turned toward the south. Good-by! you lonely loch, with the silent shores and the silent tombs—a hundred farewells to you, wherever we may be going!

And slowly we beat down the loch, against this light southerly breeze. But as we get farther and farther into the open, surely there is something in the air and in the appearance of the southern sky that suggests that the glass has not been falling for nothing. The sea is smooth, but there is a strange gloom ahead of us, and beyond the islands that we visited yesterday nothing is visible but a wan and sultry glare. Then, afar, we can hear a noise as of the approach of some storm; but perhaps it is only the low sound of the swirling of the tides round the shores. Presently another sound attracts attention—a murmured hissing, and it comes nearer and nearer; dark spots, about the size of a threepenny-piece, appear on the white decks. The women have scarcely time to send below for their sunshades when the slight shower passes by—the decks are not even left damp. Then farther and farther we creep away towards the south; but where we expected to catch

some far glimpse of the Irish coast—the blue line of Rathlin or the Antrim cliffs—there is only that dim, sultry haze.

Then another sound—a dull *flop! flop!*—in the distance, and the stragglers who have remained below after luncheon are hastily summoned on deck. And there, far away in the haze, we can dimly descry the successive curved forms of a school of dolphins, racing each other, and springing twenty or thirty feet in the air before they come down with that heavy thud on the water. Those of us who have watched the beautiful lithe fish racing and chasing by the side of an Atlantic vessel, would fain have been somewhat nearer; but we can only see the dim forms springing into the haze. Then the dull pistol-shots in the south slowly cease, and we are left alone on the low murmuring sea.

"But where is Miss Mary?" says the Laird, suddenly becoming aware of the absence of his chief companion.

"Oh, she is in the saloon!" says his hostess quickly and anxiously. "She is doing something to one of her water-colors. I suppose we must not disturb her."

"No, no; certainly not," returns the Laird lightly; and then he adds, with a smile which is meant to be very significant, "There is never any harm in hard work. Let her go on; she will have a fine collection of sketches before she leaves the White Dove."

But our Queen Tita does not respond to that careless joke. There is a curious, constrained look on her face; and she quite peremptorily negatives a suggestion of the Youth that he should go below for the draught-board. Then one of us perceives that Angus Sutherland is not on deck.

Has the opportunity come at last, then, for the clearing away of all secret troubles? What end is there to be to this momentous interview? Is it Stornoway harbor? Is our frank-eyed young doctor to come up with a silent wonder and joy on his face—a message that needs no speech—message that only says, "About with the yacht, and let us run away to the northern seas and Stornoway?" The friend of these two young people can hardly conceal her anxiety. She has got hold of the case of an opera-glass, and opens and shuts

it quickly and aimlessly. Then there is a step on the companion-way; she does not look; she only knows that Angus Sutherland comes on deck, and then goes forward to the bow of the gig, and stands by himself, and looks out to sea.

There is silence on board; for a low rumble of thunder has been heard once or twice, and we are listening. The mountains of Jura are dark now, and the sultry mist in the south is deeper in its gloom. This condition of the atmosphere produces a vague sense of something about to happen, which is in itself uncomfortable; one would almost like to see a flash of lightning, or hear the thunderous advance of a storm breaking in upon the oppressive calm.

The Laird goes forward to Angus Sutherland.

"Well, doctor, and what think ye of the weather now?"

The younger man starts and turns round, and for a second looks at the Laird as if he had not quite comprehended the question.

"Oh, yes!" he says. "You are quite right. It does look as if we were going to have a dirty night."

And with that he turns to the sea again.

"Aye," says the Laird sententiously. "I am glad we are in a boat we need have no fear of—none! Keep her away from the shore, and we are all right. But—but I suppose we will get into some harbor to-night, after all?"

"It does not matter," he says absently; and then he goes away up to the bow. He is alone there; for the men have gone below for dinner—with the exception of John of Skye, who is at the helm.

Presently the special friend of the young man puts aside that opera-glass case, and walks timidly forward to the bow of the yacht. She regards him somewhat anxiously; but his face is turned away from her—looking over to the gloomy Jura hills.

"Angus," she says briskly, "are we not going very near Jura, if it is West Loch Tarbert we are making for?"

He turned to her then, and she saw by his face that something had happened.

"You have spoken to her, Angus?" she said, in a low voice; and her ear-

nest, kind eyes regarded the young man as if to anticipate his answer.

"Yes."

For a second or so he seemed disinclined to say more; but presently he added, scarcely looking at her,

"I am sorry that I must leave you the first time we get near land."

"Oh, Angus!"

It was almost a cry—uttered in that low, piteous voice. Then he looked at her.

"You have been very kind to me," said he, so that no one should hear. "It is only a misfortune. But I wish I had never seen the White Dove."

"Oh, Angus, don't say that!"

"It is my own fault. I should never have come from Edinburgh. I knew that. I knew I was hazarding everything. And she is not to blame—"

He could say no more, for one or two of the men now came up from the fore-castle. His hostess left him and went aft, with a hurt and indignant look on her face. When the Laird asked why Miss Mary did not come on deck, she said, "I don't know," with an air which said she had ceased to take any further care in Mary Avon's actions. And at dinner, what heed did she pay to the fact that Mary Avon was rather white, and silent, and pained-looking? She had been disappointed. She had not expected the friend of her bosom to act in this heartless manner. And as for Howard Smith, she treated that young gentleman with a cold courtesy which rather astonished him.

After dinner, when the men folk had gone on deck, and when she was preparing to go too, a timid, appealing hand was laid on her arm.

"I would like to speak to you," said the low voice of Mary Avon.

Then she turned—only for a second.

"I think I know enough of what has happened, Mary," said she; "and it would not be right for me to intermeddle. Young people are the best judges of their own affairs."

The appealing hand was withdrawn; the girl retired to the saloon, and sat down alone.

But here, on deck, an eager council of war was being held; and Angus Sutherland was as busy as any one with the extended chart—the soundings

barely visible in the waning light—and proposals and counter-proposals were being freely bandied about. Night was coming on; dirty-looking weather seemed to be coming up from the south; and the mouth of West Loch Tarbert is narrow and shallow in parts, and studded with rocks—a nasty place to enter in the dark. Moreover, when should we get there, beating against this southeasterly wind? What if we were to put her head round, and run for some improvised harbor among the small islands under the shadow of the Jura hills and wait there for daylight to show us across the Sound?

There was but one dissentient. Angus Sutherland seemed oddly anxious to get to West Loch Tarbert. He would himself take the helm all night; if only the men would take their turn at the lookout, one at a time. He was sure he could make the channel, if we reached the mouth of the loch before daylight. What! with nothing shallower on the chart than four fathoms! How could there be any danger?

But the more prudent counsels of John of Skye at length prevail, and there is a call to the men forward to stand by. Then down goes the helm; her head slews round with a rattling of blocks and cordage; the sheets of the head-sails are belayed to leeward; and then, with the boom away over the starboard davits, we are running free before this freshening breeze.

But the night is dark as we cautiously creep in under the vast shadows of the Jura hills. Fortunately in here the wind is light; the White Dove seems to feel her way through the gloom. All eyes are on the lookout; and there is a general shout as we nearly run on a buoy set to mark a sunken ship. But we glide by in safety; and in due course of time the roar of the anchor chain tells us that we are snug for the night.

"But where is Miss Mary?" says the Laird, in the cheerfully-lit saloon. He looks around him in an uncomfortable and unsettled way. The saloon is not the saloon when Mary Avon is out of it; here is her chair next to his as usual, but it is vacant. How are we to spend the last happy hour of chatting and joking without the pleased, bright face, and the timid, gentle, shy, dark eyes?

"Mary has gone to her cabin," says her hostess. "I suppose she has a headache.

She supposes the girl has a headache, and has not asked! And can it be really Mary Avon that she is speaking of in that cold, hurt, offended way?

CHAPTER XXXIV.

IN THE DARK.

AND then the next morning the Laird is infinitely distressed.

"What! not better yet?" he says.

"Dear me! I wish I could be a woman for a while, to take some tea in to her, and read to her, and coax her into better spirits. What a bad headache it must be!"

But this generous sympathy on the part of one who is little more than an acquaintance touches the heart of Mary Avon's particular friend. She reproaches herself for her cruelty. She not only gets the tea and takes it into the cabin, but she adopts a domineering tone, and declares that until the young lady begins her breakfast she will not leave the place. And then she looks at the timid, worn face; and her hand is placed gently on the hand of her friend, and she says in a lower voice,

"Mary, don't think I am angry. I am only a little bit disappointed. But I don't blame you—you could not help it. It is a pity; that is all."

The girl's face remains rather sad; but she is quite self-possessed.

"You will let me go away," she says, looking down, "when we get to some harbor?"

"There is no need," says her friend, regarding her. "Angus will leave us to-day, as soon as we get across to Can-tyre."

"Oh!" she said quickly, and looking up with a brief appeal in her eyes.

"I hope not! Why should he go away? I must go; I would rather go."

"Oh, no, Mary!" her friend said.

"If there is any 'must' in the matter, it is on his side; for you know his time is very valuable, and you must have guessed why he has already far exceeded what he proposed to himself as his holiday. No, no, Mary; let us forget what has happened as soon as we can, and make the best of the rest of our sailing. The Laird would have a fit, if you seri-

ously threatened to go. And I am sure you are not to blame."

So she kissed her on the cheek, by way of reconciliation, and left. And she told the Laird that Mary had been dutiful, and had taken some breakfast, and would be up on deck in course of time.

Meanwhile, those who had gone on deck had found the White Dove lying in a dead calm, some three miles away from her anchorage of the previous night, her sails hanging limp, a scorching sun on the white decks, and a glare of light coming from the blue sky and the glassy blue sea.

"Well, Angus," says his hostess, very merrily—for she does not wish to let the others guess the reason of his sudden departure; "you see the weather does not approve of your leaving us. What has become of your thunder-storm? Where is the gale from the south, John?"

"I was never seeing the like of this weather, mem," said the bearded skipper. Then he added, anxiously, "And is Dr. Sutherland himself going away from the yac?"

"He would like to," she says; "but how is he ever to see land again if you banish the wind so?"

"But it will no be like this long!" says Captain John eagerly—for he appears to think that Dr. Sutherland has got tired of the fine weather. "Oh, no, mem! I will answer for it. If Dr. Sutherland will wait another day, or two days, I am sure there will be plenty of wind. And we can lie in West Loch Tarbert for one day, or two days—"

"And starve?" she says abruptly.

But now it appears that one or two of the men have heard of a mysterious village lying somewhere inland from the mouth of the loch; and from a comparison of these vague rumors we gather that we may not be so far from civilization after all. Perhaps we may once again behold loaf-bread. Visions of cutlets, fowls, grouse, and hares arise. We shall once more hear some echo of the distant world if perchance there be in the place a worn and ancient newspaper.

"Aye," said the Laird hastily. "I would like to see a Glasgow newspaper! I'm thinking they must have got the

steam fire-engine by now; and fine games the bairns will have when they begin to practise with it, skelping about in the water. It would be a grand thing to try it in the public garden when we get it; it would keep the shrubs and the borders fine and wet—eh?"

"And it would be quite as interesting as any plaster fountain," says his hostess encouragingly.

"As handsome every bit," says the Laird, laughing heartily at his play of imagination, "as any bit laddie done up in stucco, standing on one leg, and holding up a pipe! It's a utilitarian age, ma'am—a utilitarian age; we will have instead of a fountain a steam fire-engine—very good! very good!—and they bodies who are always crying out against expenditure on decoration will be disappointed for once."

The Laird had at last discovered the whereabouts of the mysterious village on the admiralty chart.

"But what newspaper will we get in a place hidden away like that?—out of the reach of all communication wi' the world. They'll be a century behind, mark my words. It is when ye live within a reasonable distance of a great centre of ceevilization, like Glasgow, that ye feel the life of it stirring your own place too; and ye must keep up with the times; ye must be moving. Conservative as I am, there is no supersteetious obstinacy about me; moving—moving—that's the word. The more important the matter in the interest of the public, the more necessary is it that we should have an impartial mind. If ye show me a new sort of asphalte, do ye think I would not examine it, jist because I recommended Jamieson and MacGregor's patent?"

He appealed boldly to his hostess.

"Oh, certainly; certainly you would!" she says, with an earnestness that might have made Jamieson and MacGregor quail.

"For three weeks," says the Laird solemnly, "I was on that committee, until it seemed that my breakfast, and my dinner, and my supper every day was nothing but tar-smoke. What wi' the experiments without and within, I was jist filled with tar-smoke. And would ye believe it, ma'am, one o' they Radical newspapers went as far as to

say there were secret influences at work when Jamieson and MacGregor was decided on. My friends said, 'Prosecute the man for libel;' but I said 'No; let the poor crayture alone; he has got to earn his living!'"

"That was very wise of you, sir," says his hostess.

"Bless me! If a man in public life were to heed everything that's said about him," observes the Laird, with a fine air of unconcern, "what would become of his time? No, no; that is not the principle on which a public man should found his life. Do your best for your fellow-creatures, and let the squabblers say what they like. As ah say, the poor wretches have to earn their living."

Here Mary Avon appeared, somewhat pale and tired-looking; and the Laird instantly went to condole with her, and to get her a deck chair, and what not. At the same moment, too, our young doctor came along—perhaps with a brave desire to put an end to her embarrassment at once—and shook hands with her, and said "Good morning; I hope your headache is better." Her hand was trembling as it fell away from his; and her "Yes, thank you," was almost inaudible. Then she sat down, and the Laird resumed his discourse.

"I was once taken," said he, "by a fellow-commissioner of mine to a sort of singing place, or music hall, in Glasgow."

"What?"

"They wanted to have some such place in Strathgovan," continued the Laird, paying no heed; "and I was asked to go and see what sort of entertainment was provided in such places. It was a sorrowful sight, ma'am—a sorrowful sight; the wretched craytures on the stage laughing at their own songs, and the people not laughing at all, but given over to tobacco smoking, and whiskey, and talking among themselves. No glint of humor—stupid, senseless stuff. But there was one young man sung a song that had a better sound in it—I cannot remember the words—but I sometimes think there was common-sense in them; it was about minding your own business, and doing your own work, and letting fools say or think of ye what they please. Aye, I think there was something in that young man;

though I doubt, by the look of his eyes, but he was a drinker."

He turned to Mary Avon, who had been content to be a mute and unobserved listener.

"Well, Miss Mary," said he brightly, "and the headache is going? And are ye looking forward to getting letters and newspapers when we get back to the world? There is a post-office at that village of Clachan, John?"

"Oh, aye, sir!" said John; "there will be a post-office."

The Laird looked up at him reproachfully.

"But why cannot ye learn the English pronunciation, man? What's the necessity for ye to say *posht offus*? Cannot ye pronounce the plain English—*post office*?"

"I am not very good at the English, sir," said Captain John, with a grin.

"Ye'll never learn younger."

Then he went to Mary Avon, and suggested that a walk up and down the deck might do her headache good; and when she rose he put her hand on his arm.

"Now," said he, as they started off, "I do not like headaches in young people; they are not natural. And ye may think I am very inqueesitive; but it is the privilege of old men to be talkative and inqueesitive—and I am going to ask you a question."

There was certainly no effort at keeping a secret on the part of the Laird; every one might have heard these two talking as they quietly walked up and down.

"I am going to ask ye, plump and plain, if ye are not anxious about going to London, and worrying yourself about the selling of your pictures? There now; answer me that."

"Not very much, sir," she says, in a low voice.

"Listen to me," he said, speaking in a remarkably emphatic way. "If that is on your mind, dismiss it. I tell you what: I will undertake, on my own responsibility, that every painting in oil, and every sketch in oil, and every water-color drawing, and every sketch in water-color that ye have on board this yacht, will be sold within one fortnight of your leaving the yacht. Do ye understand that?"

"You are very kind, sir."

"I am not bletherin'," said he; "no man ever knew me draw back from my word. So put that anxiety away from your mind altogether, and let us have no more troubles. I could sell—I could sell four times as many for ye in a fortnight! Bless ye, lassie, ye do not know the people in the West of Scotland yet—ye'll know them better by and by. If there's one thing they understand better than another it is a good picture; and they are ready to put their hand in their pocket. Oh, they Edinburgh bodies are very fine creetics—they have what they believe to be an elegant society in Edinburgh—and they talk a great deal about pictures; but do they put their hand in their pocket? Ask Tom Galbraith. Ask him where he gets three-fourths of his income. He lives in Edinburgh, but he gets his income from the West of Scotland. Tom's a wise lad. He knows how to feather his nest. And when he has become independent of the picture-dealers, then he'll go to London, and fight the men there on their own ground."

"I should like to see some of Mr. Galbraith's work," she said, "before I return to England."

"You will have plenty of leisure to look at them by and by," replied the Laird quite simply. "I have some of Tom's very best things at Denny-mains."

It was not until the cool of the afternoon that a light breeze sprung up to fill the sails of the White Dove, and press her gently on toward the coast of Cantyre. By this time every one on board knew that Angus Sutherland was leaving, and leaving for good.

"I hope ye will come and see me at Denny-mains, Dr. Sutherland," said the Laird good-naturedly, "when ye happen to be in Scotland. I have a neighbor there ye would be glad to meet—a man who could talk to ye on your own subjects—Mr. Stoney."

Our doctor paid but little heed. He was silent, and distraught. His eyes had an absent and heavy look in them.

"A most distinguished man," the Laird continued. "I am told his reputation in England is just as great as it is in this country. A very distinguished

man, indeed. He read a paper before the British Association not many years ago."

"About what, do you remember?" said the other, at last.

"H'm!" said the Laird, apparently puzzling his memory. "Ye see, a man in my poseetion has so much to do with the practical business of life that perhaps he does not pay just attention to the speculations of others. But Mr. Stoney is a remarkable man; I am astonished ye should have forgotten what the paper was about. A most able man, and a fine, logical mind; it is just beautiful to hear him point out the close fitness between the charges in the major proposeetion in the Semple case, and the averments and extracts in the minor. Ye would be greatly delighted and instructed by him, doctor. And there's another thing."

Here the Laird looked slyly at Mary Avon.

"There's a young leddy here who has a secret of mine; and I'm thinking she has not said much about it. But I will make a public confession now: it has been on my mind for some time back that I might buy a screw yacht."

The Laird looked triumphantly around; he had forgotten that it was a very open secret.

"And wouldn't it be a strange thing if this very party, just as we are sitting now, were to be up at this very spot next year, on board that yacht?—wouldn't that be a strange thing?"

"It would be a jolly pleasant thing," said the youth.

"You are very kind to include me in the invitation," said Angus Sutherland; "but I doubt whether I shall ever be in Scotland again. My father is a very old man now; that is the only thing that would call me north. But I think I could get on better with my own work

by going abroad for some years—to Naples, probably. I have to go to Italy before long, any way."

He spoke in a matter-of-fact way; he did not doubt that he might pursue his researches better in Naples.

It was in the dusk of the evening that we slowly sailed into West Loch Tarbert—past a series of rocks and islands on which, as we were given to understand, seals were more abundant than limpets. But whereas the last haunt of the seals we had visited had introduced us to a solitary and desolate loch, with sterile shores and lonely ruins, this loch, so far as we could see, was a cheerful and inhabited place, with one or two houses shining palely white amid the dark woods. And when we had come to anchor, and sent ashore, although there were no provisions to be got, the men returned with all the necessary information for Angus Sutherland. By getting up very early next morning, and walking a certain distance, he would catch a certain coach, which would take him on to Tarbert on Loch Fyne in time to catch the steamer.

And so that night, before we turned in to our respective cabins, the doctor bade us all formally good-by; and Mary Avon among the rest. No one could have noticed the least difference in his manner.

But in the middle of the night, in the ladies' cabin, a sound of stifled sobbing. And the other woman goes over to the berth of her companion, and bends her head down, and whispers,

"Mary, why are you crying? Tell me!"

She cannot speak for a time; her whole frame is shaken with the bitter sobs. And then she says, in a low, trembling, broken voice,

"He has not forgiven me. I saw it in his face."—*Cornhill Magazine*.

FROM THE CRADLE.

BY FREDERICK LOCKER.

THEY tell me I was born a long
Three months ago,
But whether they are right or wrong
I hardly know.
I sleep, I smile, I cannot crawl,
But I can cry—
At present I am rather small—
A babe am I.

The changing lights of sun and shade
 Are baby toys;
 The flowers and birds are not afraid
 Of baby-boys.
 Some day I'll wish that I could be
 A bird and fly;
 At present I can't wish—you see
 A babe am I.

—*Cornhill Magazine.*

THE GRIEVANCES OF WOMEN.

BY MRS. OLIPHANT.

A NUMBER of invitations have been sent out lately to ladies of all classes to attend a meeting of women in St. James's Hall (I think) in the beginning of this month. It is intended to press upon the notice of the new government the claims of women to the suffrage. It will, no doubt, be largely attended, but not by the present writer or many others of her way of thinking, and that for the weakest of all possible reasons; but the occasion furnishes a not inappropriate opportunity of expressing some of the opinions of quiet and otherwise voiceless women, with as much dislike to platforms as their grandmothers would have had, upon the subject of feminine grievances, sentimental and otherwise.

Our reason for not going to this meeting or any like it is simple. We are so weak as to be offended deeply and wounded by the ridicule which has not yet ceased to be poured upon every such manifestation. We shrink from the laugh of rude friends, the smile of the gentler ones. The criticisms which are applied, not to one question or another, but to the general qualities of women, affect our temper unpleasantly. We would rather, for our parts, put up even with a personal wrong in silence more or less indignant than hear ourselves laughed at in all the tones of the gamut and held up to coarse ridicule. This is a confession of poverty of spirit and timidity of mind which I am entirely aware of, and somewhat ashamed to utter; but it belongs to my generation. In this way, I am sorry to say, a great many of the newspapers and public speakers of the coarser sort have us in their power, and are able to quash the honest opinion of a great many women whose views on the subject might be

worth knowing perhaps, being the outcome of experience and average good sense, if no more. It is a disagreeable effort even to write on the subject for this very reason. Fair and honorable criticism is a thing which no accustomed writer will shrink from. Some of us have had a good deal of it in our day, and have not complained; even criticism which the subject of it may feel to be unfair, sometimes is not unbeneficial; but to be met with an insolent laugh, a storm of ridiculous epithets, and that coarse superiority of sex which a great many men think it not unbecoming to exhibit to women, is a mode of treatment which affects our temper, and those nerves which the harshest critic is condescendingly willing to allow as a female property. I admit for my part the superiority of sex. It is not a pretty subject, nor one for my handling. Yet it is a fact. As belonging to the physical part of our nature, which is universal—whereas the mental and moral part is not so—that superiority must always tell. It will keep women in subjection as long as the race endures. We may say and do what we will, but the fact will remain so, as it has always done. I do not believe that on any broad area culture or progress will largely affect it. But this is not an argument which it might be supposed fine minds would care to appeal to. It is the argument of the coal-heaver, and unanswerable in his hands. As a matter of fact, however, it is not only the coal-heaver who employs it, but a great many accomplished persons in other walks of life who might be supposed very capable of meeting and overcoming feminine reasoning without recourse to that great weapon. The one good result which

has come of the many recent agitations on the subject is, I think, that the strong abuse poured upon those women who have not shrunk from exposing themselves to ridicule on these questions has a little turned the stomachs (it seems impossible to speak otherwise than coarsely upon such a subject) of the more generous order of men. This is a result, limited as it is, which never could have been attained had all women been as cowardly as I confess to being. The dash in our faces of such an epithet as that of the "shrieking sisterhood," for example, more effectual than any dead cat or rotten egg, would have driven us back, whatever our wrongs had been, into indignant and ashamed silence. But it is well that there are some bolder spirits who have encountered the storm, and made it apparent not only that rotten eggs are no arguments, but that the throwing of them is not a noble office. I am glad to forget the particulars of that famous speech of Mr. Smollett's some years ago which had so great an effect at the time, but it was very advantageous to the object against which it was directed. Notwithstanding this practical improvement, however, men still laugh with loud triumphant derision, and women, cowards like myself, laugh, too, somewhat hysterically, lest they should be thought to entertain sentiments which evoke so much abusive mirth—laugh on the wrong side of their mouths, to use a vulgar but graphic expression, and shrink from appearing to take any interest in a question which it is impossible to believe could fail to interest them but for this coercion. I am almost sure that we, women in general, would have preferred that the subject should never have been mooted at all, even when we felt it of the profoundest personal importance, rather than subject ourselves and our position, rights and wrongs and supposed weaknesses, and our character altogether, to discussion before our children and our dependants. It is not pleasant for a woman who has sons, for instance, to feel that they who owe her obedience and respect, are turned into a laughing tribunal, before which her supposed pranks are to be exhibited and her fundamental imperfections set forth. But this has now been done for good or evil, and as it has pro-

duced, I believe, some good results, and is likely, I hope, to produce more, we can scarcely avoid being grateful, even if with very mixed feelings, to those who have received the first storm of nasty missiles, and borne all the opprobrious names, and have had all the vile motives imputed to them that experts can imagine. While these bold pioneers—let us hope, not without some enjoyment of the fight, such as conflict naturally brings with it—have been bearing the brunt of battle, we have looked on with a great deal of silent exasperation. That men should entertain those opinions of women which have been expressed so largely has been a painful revelation to many, and it has given a far keener point to the sense of injustice which exists more or less in every feminine bosom—injustice actual and practical, which may be eluded by all sorts of compromises and expedients, and injustice theoretical and sentimental, which it is more difficult to touch. When I say sentimental it is not in any ludicrous sense that I use the word. Any actual injury is trifling in comparison with an injurious sentiment, which pervades and runs through life. And I think the greatest grievances of women, those upon which all others depend and from which they spring, are of this kind. Most of us of a reasonable age prefer to keep our sense of injury, our consciousness of injustice, dormant, but it exists in all classes. It has been handed down to us from our mothers, it descends from us to our daughters. We know that we have a great many things to suffer, from which our partners in the work of life are exempt, and we know also that neither for these extra pangs do we receive sympathy, nor for our work do we receive the credit which is our due. But whenever such questions are brought under public discussion we are bewildered to find how little these inequalities in our lot are comprehended, and how doubly injurious is the estimate formed of us by our husbands, our brothers, and our sons. This has been all stirred up and made apparent by recent discussions, and for this generation at least it is no longer possible to hush it up and keep the feeling it produces to ourselves.

In what I have to say on this subject

I do not wish to touch upon any actual wrong or cruelty to which women are by law subjected. As men seem to think that the laws which bear hardly on women are the bulwarks of their own existence, it is very unlikely that they will ever be entirely amended. It is curious that they should be so anxious to confine and limit the privileges of the companion who is avowedly the weaker vessel. The Lilliputians bound down Gulliver by a million of little ligatures—but that was a proceeding full of sense and judgment, since he could have demolished a whole army of them. But if it had been a Lilliputian hero who had been bound down by a larger race, it would have been absurd; and it is very inconceivable how it could be dangerous to men to liberate a smaller and weaker competitor, whom they coerce every day of their lives, and whose strength, weak as it is, is burdened by many drawbacks, to which they are not subject. So it is, however, and so it is likely to be for a long time at least. But it is the general sentiment which affects my mind more than individual wrong. The wrongs of the law are righted in a great many—in perhaps most individual cases—by contracts and compromises, by affection, by the natural force of character, even by family pride, which does not desire its private affairs to be made the talk of the world. But sentiment is universal and tells upon all. I allow (as has been already said—though not without some contempt for those who stand upon it) the superiority of sex. I may also say that I decline to build any plea upon those citations of famous women, with which even Mr. Mill was so weak as to back up his argument. It does not seem to me of the slightest importance that there existed various feminine professors in Italy, in the Middle Ages, or even that Mrs. Somerville was a person of the highest scientific attainments. I allow, frankly, that there has been no woman Shakespeare (and very few men of that calibre: not another one in England, so that it is scarcely worth taking him into account in the averages of the human race). If such fanciful arguments were permitted, it might be as sound a plea to say that, with a few exceptions, Shakespeare embodied all that was noblest in his genius, not in men

but in women, giving us a score of noble and beautiful human creatures, daughters of the gods, as against his one Hamlet. All this is however entirely beyond and beside the question. I do not want even to prove that women are equal to men, or to discuss the points in which they differ. I do not pretend to understand either Man or Woman, in capitals. I only know individuals, of no two of whom could I say that I think they are entirely equal. But there are two, visibly standing before the world (which is made up of them) to be judged according to their works, and upon these works I wish to ask the reader his and her opinion.

This is mine to start with—that when God put two creatures into the world (I hope that persons of advanced intelligence will forgive the old-fashioned phraseology, which perhaps is behind the age) it was not that one should be the servant to the other, but because there was for each a certain evident and sufficient work to do. It is needless to inquire which work was the highest. Judgment has been universally given in favor of the man's work, which is that of the protector and food-producer—though even here one cannot but feel that there is something to be said on the weaker side, and that it is possible that the rearing of children might seem in the eyes of the Maker, who is supposed to feel a special interest in the human race, as noble an occupation, in its way, as the other. To keep the world rolling on, as it has been doing for all these centuries, there had been needful two creatures, two types of creatures, the one an impossibility without the other. And it is a curious thought, when we come to consider it, that the man, who is such a fine fellow and thinks so much of himself, would after all be a complete nonentity without the woman whom he has hustled about and driven into a corner ever since she began to be. Now it seems to me that the first, and largest, and most fundamental of all the grievances of women, is this: that they never have, since the world began, got the credit of that share of the work of the world which has fallen naturally to them, and which they have, on the whole, faithfully performed through all vicissitudes.

It will be seen that I am not referring to the professions, which are the trades of men, according to universal acknowledgment, but to that common and general women's work, which is, without any grudging, acknowledged to be their sphere.

And I think it is one of the most astonishing things in the world to see how entirely all the honor and credit of this, all the importance of it, all its real value, is taken from the doers of it. That her children may "rise up and call her blessed" is allowed by Holy Writ, and there are vague and general permissions of praise given to those who take the woman's part in the conflict. It is allowed to be said that she is a ministering angel, a consoler, an encouragement to the exertions of the man, and a rewarder of his toil. She is given within due limitations a good deal of praise; but very rarely any justice. I scarcely remember any writer who has ever ventured to say that the half of the work of the world is actually accomplished by women; and very few husbands who would be otherwise than greatly startled and amazed, if not indignant, if not derisive, at the suggestion of such an idea as that the work of their wives was equal to their own. And yet for my part I think it is. So far as I can see, the working-man's wife who has to cook and clean, and wash and mend, and do all the primitive services of life for her family, has harder and more constant work than her husband has; and rising upward in the ranks of life, I think the same balance goes on, at least until that level of wealth and leisure is reached, at which the favorites of fortune, like the lilies, toil not neither do they spin. But I am not concerned with those heights. What dukes and duchesses do, and which of them work the hardest, will scarcely tell upon the argument; nor am I deeply versed in the natural history of millionaires. But so far as I am acquainted with the facts of existence, the woman's hands are everywhere as full of natural occupation as are those of the man. To talk of the great mass of working women, the wives of the poorer and laboring classes, in a pretty and poetical way as the inspirers of toil, the consolers of care, by whose smiles a man is stimulated to industry and rewarded for his

exertions, would be too ridiculous for the most rigid theorist. Whatever powers of this passive kind may be possessed by the wife of the bricklayer or carpenter will stand her in little stead if she does not put her shoulder to the wheel. "A woman's work is never done," is the much more genuine expression of sentiment on that level, which is by far the largest of society. The man's work lasts a certain number of hours, after which he has his well-earned leisure, his evening to himself, his hours of recreation, or of lounging; but his wife has no such privileged amount of exemption from toil. Her work is "never done." She has the evening meal, whatever it may be, to prepare, and to clear away, and the children to get to bed, and the mending to do, in the hours when he is altogether free, and considers himself with justice to have a right to his freedom. In very few cases does it occur to the woman to grumble at this, or to wonder why her lot should be harder than his. It is natural; it is her share. The whole compact of their married life is based upon this, that she should do her work while he does his; and hers is the share which is "never done." I do not say a word against this law of nature; but I object that while this is the case, the poor woman who works so hard is considered as a passive object of her husband's bounty, indebted to him for her living, and with no standing-ground or position of her own. She is so considered in the eye of the law; and though the foolishness of the sentiment is too manifest in her individual case to be insisted upon, yet she is implied in the general sweeping assertion which includes all married women. "Men must work, and women must weep," says the ballad. I would like to know what the fisherwomen of our sea-coasts say to this lugubrious sentiment, or how much time they find to indulge in that luxury.

It is scarcely necessary to follow domestic history up through all its lines for the purpose of proving that everywhere this rule is the same. A poor woman with a house full of children has everywhere and in all circumstances her work cut out for her; and when the element of gentility comes in, and there are appearances to be kept up, that labor is

indefinitely enlarged. Which of the two does the reader suppose has most to do : the merchant's clerk, for instance, who earns his salary by six or eight hours' work in his office, or his wife, who has to pinch and scrape, and shape and sew, and sit late at nights, and rise early in the mornings, in order to keep a neat and cheerful house, and turn out the children in such a guise as to do no discredit to their father's black coat ? If I had to choose between the two, I should choose the husband's share and not the wife's. The man is more exposed to outside risks and discomforts ; but the moment he enters his home he is privileged to rest and be waited on as much as if he were a sultan. The same rule exists everywhere. Among shopkeepers of all but the highest class, the wife, in addition to her natural work, takes her share in the business, and such is the case in a great many other occupations. She keeps the books ; she makes out the bills ; in one way or another she overflows from her own share of the work into his. The poor clergyman's wife (I know one such with such hands of toil, scarred and honorable !—hands that have washed and scrubbed, and cooked and sewed, till all their lady softness is gone) is his curate as well. Where is there any class of life in which this is not the case ? When we come to the higher levels of society the circumstances are changed a little. Usually wealth means a cessation more or less of labor. But a great lawyer, or a great doctor for instance, may have reached the very height of success without having his actual toil diminished ; and his wife in that case may be carried high upon the tide of his success to a position of ease and luxury which bears little proportion to the labor with which he must still go on, keeping up the reputation and the career which he has made. Even in that case she will have a great establishment to manage, servants to rule, and social duties to perform, and always, the first and most sacred duty of all, the children to care for, which makes her life anything but an unoccupied one. But the wife of a professional man who is struggling into work and celebrity has as tough a task as her humbler neighbor. In the present constitution of society, people upon a certain

level of position are supposed to live pretty much alike whether their income is counted by hundreds or by thousands. A smaller and less costly house, a parlor-maid instead of a butler, are the only concessions which custom makes ; but things must be as " nice " in the small house as in the great, and neither in their table nor in their apparel can the poorer pair afford to show any greatly perceptible difference between themselves and their wealthier friends. They must " go out " in much the same way. They must even entertain now and then in much the same way ; they must take as much pains with the education of their children, and they must not even be very much behind in the decoration of their house. How is all this to be done upon an income so much inferior—upon the probably precarious earnings which this year are a little more and next year may be a great deal less ? This dreadful problem, which can never be lost sight of day by day, if any satisfactory solution is to be given to it, is almost entirely the wife's share of the business. She it is who must take it in hand, to secure as much as can be had of comfort and modest luxury and beauty, out of the poor blank sum of money, which in itself is barren of all grace. She must watch over all the minutiae of household living ; she must keep a careful eye upon weekly bills, and invent daily dinners, and keep servants in order, and guide the whole complicated machinery so that nothing shall jar or creak, and no part of it get out of gear. Housekeeping is a fine science, and there are some women who show a real genius in it ; but genius that makes everything easy is rare ; and in general it is a hard struggle to carry on that smooth and seemingly easy routine of existence which seen outside appears to go of itself. Try to let it go by itself for ever so short a time and you will find the difference. This is the woman's share of the work, in addition to that perennial occupation, the nurture of her children, to whom she very likely gives their earliest lessons, as well as the foundation of moral training, which tells most upon their after lives. Her day is full of a multiplicity of tasks, some greater, some smaller, but all indispensable ; since without that guidance,

and supervision, and regulation, life would be but a chaos of accidents, and society could not exist at all. I say nothing of those frequently recurring trials of maternity, common to all classes, interrupting yet intensifying that round of common toil, in which young married women are perpetually exposed to dangers as great as those of an army in active service; nor of all the heavy burdens, the illnesses and languors that accompany it. When it is necessary to find a word which shall express the last extreme of human exertion, we all know where old writers find it—in those throes of the whole being, that crisis of body and soul, which women alone have to go through.

Thus a woman has not only certain unparalleled labors in her life to which the man can produce no balance on his side, but she has her work cut out for her in all the varieties of existence. She is the drudge of humanity in its uncivilized state, and in the very highest artificial condition she carries with her natural burdens which no one else can bear.

But for this she gets absolutely no credit at all. I am not complaining of actual hardship. There are bad husbands in the world, as there are bad wives; but the number of these domestic tyrants is small, and for every man who breaks his wife's heart and makes her life wretched, there are perhaps hundreds, between whom and their wedded companions there exist the most perfect understanding and sympathy. I believe nothing can be more certain than the large predominance of happiness over unhappiness in married life. I am not speaking of tyrannical men, or women crushed under their sway, but of a great and general misconception, a sentimental grievance. Practically it may do no harm at all—theoretically it does the greatest harm. The position assigned to women is thus almost entirely a fictitious one. A man's wife is considered to be his dependant, fed and clothed by him of his free will and bounty, and all the work that she does in fulfilment of the natural conditions of their marriage is considered as of no account whatever in the matter. He works, but she does not; he toils to maintain her, while she sits at home in

ease and leisure, and enjoys the fruits of his labor, and gives him an ornamental compensation in smiles and pleasantness. This is the representation of married life which is universally accepted. Servants have a right to their wages, and to have it understood that their work is honest and thorough—when it is so; but wives must allow it to be taken for granted that they do nothing; that their work is the merest trifle, not worth reckoning in the tale of human exertions. The cajoleries by which they extract bonnets and millinery in general out of their husband's purse, who owes nothing to them while they owe everything to him, is the commonest of jokes—a joke tolerated and even repeated by many men who know better. I repeat I am not making a complaint of actual hardship. Bonnets, except in the pages of *Punch*, are seldom such accidental circumstances, and still more seldom obtained by cajoleries. When the income is large enough to be divided the wife has generally her settled allowance, and the husband has as little to do immediately with the bonnets as with the legs of mutton on the table; and in cases where the income is too small for such an arrangement, the spending of it is generally in the wife's hands. But these compromises of fact which alone would make life liveable, do not lessen the injury of the assumption which continues to exist in spite of them.

A very trifling incident directed my thoughts to this not very long ago. It was of no importance whatever, and yet it contained the whole question in it. I was making an insignificant journey in company with a married pair, between whom there was the most perfect understanding and good intelligence. The lady wore a pair of very shabby gloves, to which, by some accident or other, attention was called. The husband was shocked and ashamed. "One would think," he said, "that I could not afford to buy you gloves." Now here were the facts of this case. Both had a little money, the wife's share being, I think, about equal to her husband's. He had been a University Don, and was then a "coach," taking pupils. Some six or eight young men were living in his house, and of course his wife had her cares of housekeeping so much enlarged as to

make them an engrossing and constant occupation. She had besides a large family of small children. If she did not work as hard for her living as he did, then the words have no meaning; but so little did this good man suppose her exertions to be worth, so little share had she, according to his ideas, in the actual business of life, that he spoke of her want of gloves as a reflection upon him, as he might have spoken of the neglected appearance of a child. He had no wish to be illiberal—he was fond of his wife and proud of her, and very willing to keep her in gloves and anything else she wanted, but he had no feeling of right in the matter; no sense that her position ought to be anything else than that of absolute dependency. Had it been necessary to bring in a stranger to do the wife's work, that stranger would have been highly paid and a very independent person indeed. But the work of the wife represented nothing to her husband, and gave her, save by his grace and bounty, no right to anything, not even to her gloves and bonnets, her share of the living which she so largely helped to earn.

In this respect, however, the most liberal and the most generous men are often as much at fault as the coarsest. They will not allow the importance of the second part in the universal duet. They will give liberally, and praise freely, but they will not acknowledge "My wife has as much to do as I have. Without her work mine would not have half its value; we are partners in the toil of living, and she has earned the recompense of that toil as well as I." No one will say this, nor will the world acknowledge it. What the world does say when a woman outside of the bonds of marriage claims to be allowed to work for her bread as she best can is, that she ought to go back to her proper sphere, which is home. But in that proper sphere, and at her own individual work, all credit is taken from her, her exertions are denied, her labor is undervalued. The only chance for her to get her work acknowledged is to do it very badly, when there will be an outcry. But when it is well done it is ignored, it is taken as a matter of course, it is never thought upon at all.

Let this be contrasted with the re-

verse case—a case by no means unfrequent, though left out of account in all popular calculations. When it happens that the woman is the richest of the two partners in life, when the living comes from her side, or when she earns it, she is considered bound to assert no consciousness of the fact. It is a horror and shame to all spectators when she makes any stand upon her moneyed superiority. That she should let it be seen that she is the supporter of the household, or remind her husband that he is in any way indebted to her, is a piece of bad taste and bad feeling for which no blame is too severe. And the woman herself is the first to feel it so. But that which seems the depth of meanness and ungenerosity in a woman is the natural and every-day attitude of the man. It is a point of honor on her part to ignore to the length of falsehood her husband's inferiority to herself in this respect; whereas the fact of her dependence upon him is kept continually before her eyes, and insisted upon, both seriously and jocularly, at every point of her career.

In all this there has been no question of the comparative mental capacity of women and men. It is a question on which I can throw little light, and which I have no space to discuss. But with the injurious sentiment which I have tried to set forth the question of intellectual inferiority has nothing to do. Granting that the natural work of women is inferior to that of men, it is no less a distinct, complete, and personal work. When the question of professional labor comes in, and the claims of those women who desire to share the trades of men and compete with them have to be considered, the point becomes open to discussion. It may be said that a woman should not be permitted to be a doctor or a lawyer, because her abilities are inferior to those of men; but as in every discussion of this kind she is bidden to go back to her natural trade, it is clear that upon the ground of domestic life and its occupations she is *dans son droit*, and entitled to have her claims allowed.

As to the other question of throwing open some professions, it is a much more difficult one. I think that here, too, there is a great deal of ungenerous sentiment on the part of men, so much as

to be astonishing and incomprehensible *in* the strong sense of superiority which exists in the male bosom from the age of two upward. It cannot be fear of a new competitor, and yet it looks like it. The doctors, a most liberal and highly cultivated profession, have shown themselves in this particular not more enlightened than the watchmakers, who have also resisted the entrance of women into their trade with violence; though nobody can know better than medical men how heavily weighted a woman is, how much more energy she must require to carry her to actual success in a profession, and how certain it is accordingly that only a few exceptionally endowed individuals can ever enter into those lists which are so fiercely guarded. But why not let convenience and general utility be the rule here as in all other matters? Every new piece of machinery in the manufacturing districts has been mobbed and wrecked at its first introduction, just as the female students would have been on one occasion had the gentlemen of the profession had their way; but the machine, if it is a good one, always triumphs in the end. My own opinion is that the advantage to women of having a woman-doctor to refer to is incalculable. To discuss the peculiar ailments of their mysterious frames with a man is always a trial and pain to the young. Necessity hardens them as they go on in life, and prejudice, and the idea that women cannot be properly educated, or that by expressing a preference for a female doctor they are exposing themselves to be ridiculed as supporters of women's rights, keeps many a woman silent on the subject; but Nature herself surely may be allowed to bear testimony on such a point. I cannot imagine it to be desirable in any way that women should get over their sense of personal delicacy even with their doctor. But at all events the question whether women should be doctors or not is one, it might be supposed, to be argued quite dispassionately. They could not invade the profession all at once in such numbers as to swamp it, and as their opponents have always indignantly maintained their want of capacity for its exercise, there could not surely be a doubt in their minds as to the failure of the experiment and their

own eventual triumph. But here once more the sentiment involved is a greater injury than the fact. Not only were the gates of knowledge barred, but the vilest insinuations, utterly beyond possibility of proof, were launched against the few blameless women who did nothing worse than ask for the privilege of studying for an enlightened profession. One or more writers, supposedly English gentlemen, in a very well known and influential English paper, asserted boldly that the women-students in Edinburgh and elsewhere desired to study medicine from prurient curiosity and the foulest of motives. This was said in English print in full daylight of the nineteenth century, and nobody, so far as I can remember, objected to it. The journalist was not denounced by his brethren, and public opinion took it quite coolly, as a thing it was no shame to say.

I ask the reader, who will probably have heard similar insinuations made in society, what is his opinion on the subject? Such a shameful accusation could be susceptible of no kind of proof; the only thing that could be proved about it would be that it came out of a bad imagination. The women assailed could not come forward at whatever cost and establish their innocence. When a man utters a slander as to an actual fact, his accusation can be brought to the test, and its falsehood proved and himself punished; but the imputation of an odious motive is a far more dangerous offence, for no one can descend into the heart of the accused to bring forth proofs of its purity. Any vile fancy can in this way asperse its neighbors with impunity, and it is not an uncommon exercise. But the fact that nobody cared, that there was no protest, no objection, and that this was thought quite a permissible thing to say and publish of some half dozen inoffensive women, is the extraordinary point in the matter. It is an injury by far more deadly and serious than a more definite offence.

I have no room to touch upon education, or other important points, but something must be said on the question of the parliamentary franchise for women. My opinion on this point resolves itself into the very simple one, that I think it is highly absurd that I should not have a vote, if I want one—

a point upon which I am much more uncertain. To live for half a century, and not to have an opinion upon politics, as well as upon most other subjects, is next to an impossibility. In former days, when the franchise was a privilege supposed to be possessed only by persons of singular and superior qualifications, such as the freemen of a borough, for instance, or the aldermen of a corporation, women, being altogether out of the question for these dignities, might bear their deprivation sweetly, as an effect of nature. Even the ten-pound franchise represented something—a solidity, a respectability—perhaps above the level of female attainment. But now that the floodgates have been opened, and all who contribute their mites to the taxation have a right to a voice, the question is different. When every house is represented, why not my house as well as the others? and indeed, I may ask, on what ground is my house, paying higher rates than a great many others, to be left out? Now that all the powers of education, judgment, knowledge, as well as property and place, are left out of the considerations, and this is the only qualification required, the stigma upon us that we are, in intelligence and trustworthiness, below the very lowest of the low, would be unbearable if it were not absurd. When even the franchise was a new thing in course of development the stigma was not so great, but now that there remains only one further step to take, and the suffrage is about to become the right of every male individual with a thatch over his head, it is difficult to understand the grounds on which women householders are shut out. I do not comprehend the difficulty of separating, in this respect, the independent and self-supporting woman from the much larger number of those who are married. In every other case the law makes no difficulty whatever about such a separation, and in this I think it is very easy. If householding and ratepaying are the conditions of possessing the franchise, a man and his wife hold but one house and pay one set of rates. She has merged her public existence in his—for the convenience of the world it is quite necessary and desirable that there should be but one rep-

resentative of the household. The two of them together support the state and its expenditure only as much as the female householder does who lives next door; they do not pay double taxes, nor undertake a double responsibility; and the married woman is by no means left out of the economy of the state. She is represented by her husband. She votes in her husband; her household has its due dignity and importance in the commonwealth. The persons who are altogether left out are those who have no husband to represent them, who pay their contributions to the funds of the country out of their own property or earnings, and have to transact for themselves all their business, whatever it may be. Some of them have never had husbands; in which case it is sometimes asked, with the graceful courtesy which characterizes the whole discussion, why such a privilege should be bestowed upon these rejected of all men, who have never been able to please or to attract what is called "the other sex." But this is illogical, I submit, with diffidence, since if these poor ladies have thus missed the way of salvation, their non-success should call forth the pity rather than the scorn of men who feel their own notice to be heaven for a woman, and who ought to be anxiously desirous to tender any such trifling compensation as a vote as some poor salve to the mortification of the unmarried. Some of us, on the other hand, have been put down from the eminence of married life summarily, and by no fault of ours. We have been obliged to bear all the burdens of a citizen upon our shoulders, to bring up children for the state, and make shift to perform alone almost all the duties which our married neighbors share between them. And to reward us for this unusual strain of exertion we are left out altogether in every calculation. We are the only individuals in the country (or will soon be) entirely unrepresented, left without any means of expressing our opinions on those measures which will shape, probably, the fate of our children. This seems to me ridiculous—not so much a wrong as an absurdity. I do not stand upon my reasoning or power of argument. Probably it is quite feeble, and capable of swift demolition. I

can but come back to my original sense of the complete absurdity and falseness of the position.

Upon this homely ground, however, of tax-paying, a possibility occurs. I think that for my part I should not be unwilling to compound for the political privileges which are denied to me. The ladies at St. James's Hall will think it a terrible dereliction from principle; yet I feel it is a practical way out of the difficulty—out of the absurdity. It would be a great relief to many of us, and it would deliver us from the sting of inferiority to our neighbor next door. We should be able to feel, when the tax-gatherer came round, that for that moment at least we had the best of it. Let there be a measure brought in to exempt us from the payment of those rates which qualify every gaping clown to exercise the franchise. It will not be a dignified way of getting out of it, but it will be a way of getting out of it, and one which will be logical and convey some solace to our wounded pride. I for one am willing to compound.

In all these inequalities and injustices, however, the chief grievance to women is the perpetual contempt, the slur upon them in all respects, the injurious accusation, so entirely beyond all possibility of proof that denial means nothing. How it can have been that men have continued for all these ages to find their closest companions and friends among those whose every function they undervalue and despise, is one of the greatest problems of human nature. We are so wound and bound together, scarcely one

man in the world who does not love some woman better than he loves any other man, or one woman who does not love some man before all other mortal creatures, that the wonder grows as we look at it. For the sentiment of men toward women is thoroughly ungenerous from beginning to end, from the highest to the lowest. I have thought in my day that this was an old-fashioned notion belonging to earlier conditions of society, and that the hereditary consciousness of it which descended to me, 'as to all women, was to be disproved by experience. But experience does not disprove it. There are, of course, many individual exceptions, yet the general current of sentiment flows full in this way. Whatever women do, in the general, is undervalued by men in the general, because it is done by women. How this impairs the comfort of women, how it shakes the authority of mothers, injures the self-respect of wives, and gives a general soreness of feeling everywhere, I will not attempt to tell. It is too large a subject to be touched by any kind of legislation; but without this the occasional wrongs of legislation, the disabilities at which we grumble, would be but pin-pricks, and would lose all their force. They are mere evidences of a sentiment which is more inexplicable than any other by which the human race has been actuated, a sentiment against which the most of us, at one period or other of our lives, have to struggle blindly, not knowing whence it originates, or how it is to be overcome.—*Fraser's Magazine*.

PLEA FOR MUSICIANS.

I HAVE before me an impression of Hogarth's "Grub Street." How well the woes of the poor author are told! A sense of aspiration disappointed pervades the apartment. The milk-woman clamors for money, the baby wails for milk, in vain; the cat and kitten, trespassing in search of warmth on their master's coat, will shortly be turned off with ignominy; the dog, who is making free with the scanty viands reserved for a future meal, will be discovered; and so on, down to the poor poet, who,

Sinking from thought to thought, a vas
profound,
Plung'd for his sense, but found no bottom
there,
Then writ and floundered on in mere despair.

Such were, such are, the woes of undiscovered authorship; and the world sympathizes. But there is another class of composer, whose ranks are crowded with indigent members similarly endeavoring to subsist on a barren imagination—I allude to musicians. No Hogarth has delineated their griefs; it has been re-

served, I believe, for melodramatists of recent years in rambles after fresh subjects to paint mixed pictures of their absurdities and sufferings. The world has no sympathy with them, and what is the reason of her insensibility? Is she not grateful to them for the many hours of happiness they have afforded her? How could she give her evening parties without Signor Rimbombo and Herr von Strom, whose joint efforts create a satisfactory emulation amongst the voices of the conversationists?

The world has no gratitude; no memory for aught but disagreeables. And yet I know not why one should speak of her so hardly, making her, as it were, the scapegoat of individuals—so meek and unvengeful as she is too. I suppose the cause is cowardice; a collective hatred, too, has all the relish without the bitter after-taste of a personal animosity. But to continue. The world hates all musicians because they make a noise. She classes them with German bands, barrel-organs, paper-boys, old-clothes-men, the irrepressible sparrow, the matutinal quack of the park-haunting duck and the town-bred chanticleer, who, by crowing throughout the night, forfeits his only claim to respect. Musicians violate the peace of the domestic hearth; their art is an obtrusive one. The poet who recites his verses and tears his hair is not, though his ravings equal those of the Cumæan Sibyl, as a rule, audible through that razor-like partition which, as in Swedenborg's other world, separates many a heaven and hell; but the abortive efforts of the tyro-musician cannot be restrained by the thickest and hardest of walls. Shut the window and door, the detestable flat notes drift down the chimney with perplexing perseverance. Do what you will, short of stopping your ears with wax, you cannot escape those unsirenish sounds. The only resource left to you is to fly to your piano—I don't ask if you have one—has a prize-fighter fists? did Fitzgerald possess a pair of pistols?—to fly to your piano and revenge your self on your unoffending neighbor on the other side. Thus the musician is not only the direct means of destroying other people's comfort, but is indirectly the author of multitudinous evils, and consequently an object of universal execra-

tion. Would not the composer of "Home, Sweet Home," whoever he may be, turn in his grave if he knew that his innocent composition was daily torturing the most Christian souls into mingled thoughts of hatred and revenge. The Persians have doubtless lived to curse that king who, in mistaken kindness, when he saw his subjects dancing without music, introduced 12,000 musicians and singers from abroad.

Yet no one will say roundly that he hates music. "Are you fond of music?" you ask your partner in the mazy waltz. "Very," she replies with a look of rapture; "but," she adds, "I don't care for Mozart, Handel, Beethoven," etc. One of England's wisest men is devoted to music, but *dislikes all compositions in the minor*.

Music is like the quack panacea for all ailments, to which, if it be successful, each attributes a particular virtue. "Ah! it may not be of any use in cases of pericarditis or acute mania, but it has often saved me from a fit of gout. Jim, you know, takes it for the hiccough." Music is the good fairy of our childhood, in whose basket is something good for every good boy. "Il Barbiere" for me; the "Eroica" symphony for you. It is not her fault that we little boys will quarrel as to which gift is the best, and abuse the donor.

The many-sidedness of music makes her many enemies. That which pleases everybody delights nobody; and music, like everything else, has points that invite criticism. London walls are not built to withstand the battery of sound with which they are so often assailed. Hence the surly attitude of the householder, enhanced, no doubt, by British idiosyncrasies. "An Englishman's house is his castle," is a favorite English proverb, a typical "John-Bullitude." The blessings of privacy are little understood in southern climates, where the necessity of a house as a shelter from the elements is not so imperative. A well-known artist, travelling in the south of Italy, had occasion to make lively protestation against an ancient sow for a bedfellow, and he subsequently heard the natives exclaiming among themselves, "Son matti! son matti! tutti gli Inglesi son matti." We Englishmen resent the slightest circumstance

which forces us to acknowledge ourselves as part of the community; and there is no more forcible reminder, except perhaps a summons to serve on a grand jury, that such is our position, than the impertinent intrusion of the music of our neighbors. The faintest sound that penetrates the sacred *paries* we regard as violating our national privilege. We harden our hearts against it. We blunt our æsthetic sensibilities. We have a stereotyped formula to express our opinion of all music so heard. It is execrable. I once had lodgings next door to a famous tenor. I thought he sang atrociously; and it was only when I found out who he was that I was obliged to recognize in him the artist who had so often entranced me at the opera. We are, in fact, like dogs—dogs in the manger—who howl at all music alike, good and bad. True it is we are not always so fortunate. True it is that the vicinity of the ambitious amateur is not to be coveted—nay, hardly to be borne.

Music, when soft voices die,
Vibrates in the memory.

But if those voices be *not* soft, and if those concords be discords, the vibrations of which the memory is sensible are more pronounced, more prolonged. We mark our disapprobation of the noise-loving qualities of Frenchmen by calling them "our lively neighbors," but if we apply these words to "the people next door" it is with a ghastly facetiousness that masks a world of concentrated spite and hoarded venom appalling in these days of civilization. We are shocked at the immodesty that causes them to give publicity to their abortive efforts. We cannot understand their want of consideration for the feelings and comfort of others; we fail to imagine how they can derive enjoyment from such ill-assorted harmony (?); we are at a loss to comprehend why their common sense does not step in and put a check upon them. Our dilemma is excusable, and the horns of it are wide apart and grievously pointed.

My facetious friend T. H. says that every man, when he is under an arch, thinks he can sing; echo is the cause of many a self-admiration. Now there are people who are born, who spend their existences, under an arch—a moral arch,

I mean. To them, if their bent be musical, crescendos and diminuendos are fantastic adornments, time an unnecessary restriction, semitones needless refinements. They thump, they bang, they bellow, they roar, they shout, they scream, they squeal. But to them the meanest, the most erratic, sound they make is better than heaven's sweetest music. It is trying to listen to the facile, well-connected amateur who dashes off a *pot-pourri* of the popular airs of the day. It is trying to detect the labored efforts of the humble, untiring, untalented student, who is ever striving, ever failing, to attain the correct rendering of a well-known classical composition. But, reader, have you ever lived next door to a family of orthodox ladies who every afternoon sing a selection of "Hymns Ancient and Modern," artfully so contrived that there is at least one note in each tune half a tone beyond the compass of the performer's voice? Why is it—I submit it to you—why is it that all musicians, good as well as bad, are prouder of their extreme notes than of any other portion of their voice? Why should the bass be ever struggling to perform feats natural to the tenor? why should the soprano be constantly endeavoring to commit larceny on the property of the contralto?

Is it because the result attained, though perchance unsatisfactory to others, is endeared to the performer by reason of the difficulty of the undertaking? Is this why these sorry sounds are prized as things of beauty, the more precious because they cannot last forever? Perhaps! But I think a deeper moral truth is here involved.

Gentle friend, have you ever been stirred into consciousness in the early morning, when the fires are unlit, when the housemaid is in bed, when the winter snow is on the ground, and the east wind is howling unreasonable retribution—by the sounds of the piano? Has the citadel of your slumber ever been thus rudely assaulted by the scaling ladders of perversely laborious young ladies? If not, you have not known regret. Young ladies, I weep tears—no *crocodile* tears—over your *scales*.

Thou, wicked old creature, with thy fallow notes, thy withered legs, thy cracked voice, of what hours of misery,

of what ghastly profanities, of what needless chilblains hast thou not been the cause? Picture me, reader, as I lie in bed, thus bereft of two hours of blissful forgetfulness. "The people next door"—that is to say, that portion of the people next door in whom I am so painfully interested, consist of five young ladies ranging from twelve years of age to twenty—"sweet and twenty," it is called—all immolating themselves on the altar of fashion, striving to be musical. They succeed each other, for to each is allotted a certain period of antepandial martyrdom. As there are family characteristics in voice, in figure, in face, so are there in music. I have heard of a self-made man, who purchased a nobleman's castle in the north, and employed a skilled painter to construct him a gallery of ancestors, in which his plebeian bottled-nose was palpably deduced, through a hundred nicely modulated gradations, from the delicate aquiline that came over with the Conqueror. A similar study is now presented to me, not in noses, but in ears; here are five young ladies all playing in succession the first movement of the Moonlight Sonata, with a stress of varying degrees of diabolicity on the last note of each triplet. There is some interest in the subject, but it is soon exhausted. This species of torture is enhanced when the torturer is scientific. I was calling the other day on some friends who have the impudence to imagine that living in a flat is the secret of true comfort. I found them in the wildest despair. I asked "why?" They only answered, "Listen." I listened. Overhead was a piano. They told me it was *tenanted*—I say *tenanted*, because I fancy the piano was of more importance to its owner than the room in which it stood—it was *tenanted* by an operatic composer. He was rehearsing a storm. "Tee-tee-tee—tee-tee-tee—tee-tee-tee—rom! pom!" There was no mistake about its being a storm, and what a storm it was! If I thought the composer was in any way attempting to be faithful to nature I would not visit even Paris again. I have since come to the conclusion that he must have studied meteorology, and in theory only. The hero was probably a meteorologist gone mad, that is, one who had over-meteoro-

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logized himself. An ideal or complete storm was visiting him in his dreams; a storm with fixtures; a storm with all possible accessories; a storm with frightful, unheard of, auxiliary occurrences. Such a storm in fact as would have effectually prevented *Aeneas* from *eating his tables*—such a storm as Walt Whitman would delight to catalogue:

I hear the so-ho of the sailors and the creaking of the chain that uplifts the anchor:

I hear the squelch of the billows on the gunwale:

I hear the cheery champing of hungry jaws at dinner:

I hear and rejoice;

For am not I part of them and they of me?

I hear in the morning at breakfast the champing of jaws diminish:

I hear the angry warnings of the rising gale:

I hear the mutterings of the animated ocean:

I hear and fear, for am not I part of them and they of me?

I appreciate the bravado of the captain:

I appreciate the sang-froid of the officers:

I appreciate the futile questionings of the anxious passengers.

For am not I part of them and they of me?

I fear the whirlwind, the whirlpool, the tornado, the simoom, and the sirocco:

I fear likewise the thunder and the lightning.

I fear the plagues of Egypt.

For am not I part of them and they of me?

I listen to the creaking of the straining cordage:

I listen to the orders of the captain amid the overbearing din of the tempest:

I listen to the clatter of the axes and the crashing fall of the mainmast:

I listen to the thud of the keel on the shingle:

I listen to the unbounded license of the crew:

I listen to the screaming of the affrighted passengers:

I listen to the awful *ultimate* silence.

For is *that* not part of me and I of *that*?

So did we listen perforce, and we wished it had been. He pauses breathless. We congratulate ourselves that Providence has placed limits to human exertion even in moments of the wildest inspiration. Silence at last! But no! tee-tee-tee—tee-tee-tee—tee-tee-tee—rom! pom! Another storm is brewing. I bid my friends farewell and return home—I confess it—to speculate on the enormous advantages that would accrue to mankind if operas could dispense with composition. But was I right thus to give way to irritability? Let me calculate the comparative importance of my discomfort and my musical friend's

unpleasant undertaking! Am I penning an epic that will eclipse "Paradise Lost?" Am I writing a history that will outdo Macaulay? Or rather, do I think I am? Then let me use all my endeavors to suppress my tuneful neighbor. I fear, however, that it is only when I am idle that I find time to grumble, or that there is aught to grumble at.

Most of us run in a groove and make ourselves very unpleasant if that groove is not well oiled for us; and thus it comes that the minor calamities of life constitute its real unhappiness, just as the little unexpected pleasures furnish the chief contribution to its happiness. After all, we are little better than children to whom the divine justice of nature has decreed that so many sugar-plums entail so much castor-oil. Therefore let us not repine if the permission to sleep in a warm, soft bed is qualified with a seasoning of adjacent discords.

We tolerate infancy, let us be charitable to infant musicians. We gloze over that period of our children's lives when their existence is a hideous nightmare—a constant alternation of famine and surfeit; when the wail of inanition follows hard upon the stertorous breathing of repletion, for the sake partly of the sudden random gleam of inner light that breaks from them, and reminds us of the great Anti-Darwin. But, to make prose of one of England's most beautiful poems, an admixture of the world's baser influence is necessary to utilize the divine essence of man. Experience teaches expression, though in that expression the subtler, ethereal quality of the mind becomes for the most part bewildered into commonplace. Divine wisdom must conform to the rules of grammar and the coarse sounds of current speech: so must the harmony of Apollo himself be thrust through the straitened mould of chromatic scales and made to thread the intricacies of counterpoint.

Therefore grumble not, O hardened, unsympathetic Londoner, if thy morning slumbers be broken by the shriek of the fiddle, or the shrill pertinacity of the flute. You cannot, of course, bring yourself to believe that futile attempts to master a simple theme may be the untutored stammering of a soul bursting with music, whose lot perhaps in some future

day, in some future world, will be to entrance his thousands, even as Israfil holds spell-bound the denizens of Paradise with the music of his heart-strings. This, you say, is hard to believe; therefore let me put another picture before you!

The scene is a garret; it is a bitter winter's day; the wind howls around and enters through a hundred crevices; an ember or two smoulders on the hearth. At a rickety table, huddled up into the corner in a vain attempt to elude the network of draughts which intersect the apartment, sits, lost in his work, the young musician. He has just completed the score of his symphony; it is his first. Smaller works he has done, and has tried in vain to get them performed; but this is that work which will make him famous for centuries to come. Perhaps it is the last thing he will ever do. Pinched by famine, benumbed with cold, he has, sown in his veins, the seeds of a fatal disease. He has just finished his score, which he regards with admiration. He has no doubts of its success. He turns to the beginning, hums the theme, gets more and more excited, rises to his feet, and seizes the crutch on which he drags himself to the nearest eating-house when he has money for a meal. He fancies himself in the National Concert Hall. Thousands of eager spectators throng that vast auditorium behind him. He hears the hum of expectancy. He gives the signal. The muted violins whisper forth the air; the basses and the 'cellos give it body; it develops; the brass contributes a mellow fullness; a running, wave-like accompaniment is heard from the harp; the whole body of instruments is now at work. "Crescendo!" The action of the young composer's arm becomes animated. The time is quickened. Faster! Faster! The movement is reaching a climax. "Forte! forte! più! più! fortissimo!" There peals forth a tremendous unison. But no! poor soul, there is no answer to his call but the trembling of the crazy boards on which he sways his feeble frame. There are no thousands in whose hearts he can raise a kindred glow of emotion. That symphony, too, like his other works, will decay unknown in the closet. He sinks into his chair in a passion of weeping.

No doubt he is one of those whose efforts at composition, before he was forced to sell his piano, have educated many a muttered oath from his luckless neighbors. But he is a man of a great soul and a noble, useful life.

You deny; you disbelieve. You deny the utility of a life that achieves naught but disappointment. Reader, the fame of many a contemporary is built on *such* disappointments—the disappointments of others. You disbelieve that the history I have sketched is possible in these days of enterprising managers, of universal good taste, of charity organizations. Reader, the world is awide world, and there is many a dreary spot in it. You ask: "Why does he waste his time and his life in seeking after the unattainable?" You hate the pride that spurns what you call "a useful life." You would have him scrape the fiddle in a music-hall. You would wish him to dance attendance in the schoolrooms of the rich. But you forget that where nature bestows fine brains she seldom adds a broad back. You forget that the subtle imagination of the artist may be blighted in the tussle with mechanical routine and enforced inferiority. And yet you doubtless have friends whose existences have been embittered by the impossibility of exercising a fancied creative power, but to whom the necessity for bread has appeared paramount. Our poor friend did not so regard that necessity; and seeing the alternative, there is much to be said for his way of thinking. I beg pardon, I have unwittingly become serious.

Hogarth, I said, had not represented the woes of musicians—I meant the woes of unrecognized musical talent. His picture of the "Enraged Musician" portrays the outrage of musical sensibility. The ear that has, by long use, become accustomed only to sweet concordance, feels acutely the babel of that barbarous serenade. The sufferings of the "Enraged Musician" are our own intensified. It never, I confess, occurred to me till the other day that a musician who had thus suffered might mentally transfer his martyrdom to his neighbor, and thus become so struck with the brutalities he is committing as to desist altogether from music. This possibility suggested itself to me while reading Mr.

Schuyler's interesting book on Turkestan. There appears to exist among the Tartars a refinement of feeling not credited to European votaries of harmony. Mr. Schuyler will doubtless pardon me for not quoting the anecdote *verbatim*: as certain variations of language are necessary to elucidate the meaning which I attach to the fable.

Its hero was a local saint, Khorkhut by name, whose stature, fourteen feet, made him an object of some eminence in the country. He was fond of music and had a desire to learn to play upon the lute. Accordingly, being of a sensitive temperament himself, and knowing of what discomfort to others are the ill-harmonies evoked by the unskilled hand, he unselfishly withdrew to the edge of the world in order to complete his musical education. In this hope, however, he was disappointed. Visited one night by a dream, he thought he saw some men digging a grave. "For whom is that grave?" he asked. "For Khorkhut," they replied. He awoke, and the result of this short but plainly-pointed conversation was that he speedily removed his abiding-place. So hasty a determination, so evident a care for life, may strike the reader as inconsistent with that strength of character which marks every truly great man. A word about this hereafter. From the edge of the world Khorkhut now removes to its eastern corner. No rest, however, can this giant son of harmony find here. The same vision again assails him, and with the same results. Now he pitches his tent on the western corner; now on the northern; now on the southern; but all in vain. At length it dawned upon him that his only resource was to try the centre of the world; and he consequently encamped upon the banks of the Syr-Daria, which, as every well-informed person knows, *is* the centre of the world. But alas! there too these hideous phantoms pursued him. "Must I," he cried in piteous lamentation, "must I then resign all hope of being able to discourse with thee, O lute, O mistress, in that sweet language which thou alone understandest? Ye Gods, if there be any pity in Heaven," he continued (unconsciously quoting Æneas' stock phrase), "have mercy on your hapless slave, who, after all, only wants to learn to

play upon the lute." Then seeing the dark waters of the Syr-Daria rolling beneath, and despairing of pity, he cast his mantle on the stream and himself on the mantle. But, wonderful to relate, those murky waters did not engulf him. He floated, and there, in this unassailable position, he found peace at length. He played his lute; he played it for a hundred years; and *then* he died. The manner or the cause of his death has not been transmitted to us. It must ever remain a mystery whether his passion for the lute was the secret of his longevity; or whether, had he been no musician, and lived like other folk, he might not have attained to even a greater age. Perhaps the mere fact of having so completely his own way delayed the process of natural decay. But, be that as it may, the issue is foreign to our subject.

The question which now concerns us is, Why was Khorkhut sainted? In some rustic European calendars we find such undeserving saints as Pilate and his wife; but the Easterns have generally some sufficient reason for their canonizations. Of his pedigree we know nothing; we may conclude therefore that the dignity was not hereditary. Stature is a sign of distinction in the East, but it is an attribute of devils as well as heroes. Thus we may conjecture that his sainthood was conferred on him for some such reason as the following. He was a man who lived a long life with a distinct object in view, and, despite the difficulties thrown in his way, at last attained that object. These difficulties were aggravated—1, by the fact of his enormous stature, which rendered his proceedings a matter of general notoriety; 2, because of his extremely sensitive nature, which did not allow him to interfere with the comfort of his fellows; for the nightmares, which haunted him, were nothing but the reproaches of his unselfish conscience. Once, however, in the midst of the desolate flood of the Syr-Daria, he knew that he was at length alone, and could learn how to unburden his music-laden soul without annoyance to any one. These are nice points of feeling to be commemorated by barbarian Tartars, say you. Timour was a Tartar; and the reasons he alleged for conquest were

substantially the same as those now put forward by Christian Russia.

Music is a physical necessity for certain people. No one will be inclined to doubt this who has been at the university, and heard the simultaneous burst of melody which arises the very instant that the clock marks the hour when the authority of learning is placed in abeyance, and music sways the alternating sceptre. Thus, without doubt, there are many of us whom delicacy of feeling prevents from seeking to express our thoughts in harmony, herded together, as we are, in the metropolis, and since, unlike Khorkhut, we cannot play nomad.

Half of us thrive on noise, and the other half cannot subsist without absolute quiet. What, then, can be done? Can we, like the reverse of a solution I once heard of the poor-rate difficulty in London, namely, to surround each rich man's house with a circle of squalid hovels—can we banish all pianos and such like inventions of the evil one to one quarter of London? Imagine, if you can, the difficulties of this! And if it were accomplished, imagine the rivalry that would spring up between the musical and the non-musical members of the community.* Our boasted London would then be little better than the Indian village of which Sir William Sleeman writes, where there are two Mohammedan parties, who celebrate their religion, one in silence, the other to the sound of the tom-tom. (N.B. I should think the quietists would ultimately adopt the rival mode of worship.)

I know of no remedy for this state of affairs. To me the problem appears insoluble. But let us not sit with folded hands! There is a palliative which suggests itself to me—a medicine prescribed by the most famous physicians—a medicine easy of application but difficult to meet with. It is *charity*.

Do I doctor myself with the medicine I prescribe to others? you ask; or am I a musician, and thus plead the cause of my profession?

* Victor Hugo evidently imagines that some such division of London was necessitated by the bitterness of party-feeling there, when he defines "le West-end" as "partie occidentale de Londres habitée par les Torys."

Between ourselves, dear reader, neither is the case. I certainly do not practise what I preach, but being capable of some sort of studied noise which the lenient might possibly recognize as music, I am thus in a position to exer-

cise the "lex talionis," which I do rigidly—"an eye for an eye," a headache for a headache. For further particulars inquire next door.—*Cornhill Magazine*.

RECENT SCIENCE.

(Professor Huxley has kindly read, and aided the Compilers and the Editor with his advice upon, the following article.)

THE year 1774 will always stand out as a memorable year in the annals of chemical science. It was then that Priestley made his capital discovery of oxygen. It was then, too, that a poor Pomeranian apothecary, who had settled in Sweden, obtained for the first time a curious yellowish vapor, which was destined to acquire an importance almost equal to that of oxygen itself. This yellowish vapor—the *Chlorine* of modern chemists—was regarded, for many years, as a chemical compound; but from the time when Sir Humphry Davy brought forward the evidence upon which he based his opinion that it must be viewed as an undecomposable form of matter, chlorine has held its place, with but little dispute in this country, in our list of elementary gases.

It is therefore with much surprise that chemists have lately heard of certain experiments, conducted in the Zurich Polytechnikum, which tend to shake their faith in the views which have been accepted for well-nigh seventy years. We are asked, in fact, to believe that chlorine may, after all, turn out to be a compound body—possibly an oxygen-compound. Viewed in connection with other recent researches and speculations on the constitution of the so-called elements,* these experiments, and the deductions therefrom, are just now of peculiar interest; and, unless the Swiss chemists are curiously in error, their investigations will rank among the most important which have been undertaken during the past year.

To understand the strange reversion to old views which seems likely to follow from these recent researches, it is neces-

sary to look back upon the history of chlorine. The discoverer of this gas was Carl Wilhelm Scheele, a native of Stralsund in Pomerania, who in 1773 removed to Upsala in Sweden. His taste for research had attracted the attention of the great chemist Bergmann; but the discoveries of the young apothecary soon overshadowed those of his patron, and gave rise to the remark that "the greatest of Bergmann's discoveries was the discovery of Scheele."†

It was during the examination of some ores of manganese that Scheele first procured chlorine. Although some of these ores had been known for ages, very crude notions prevailed as to their composition until Scheele entered upon their study. The most common ore of manganese is known to mineralogists as *Pyrolusite*, a name which it has received in consequence of its use by the glassmaker in cleansing, or decolorizing, molten glass which may happen to have become tinted by the presence of iron. The same application of this "fire-washing" mineral earned for it its old name of "glass-soap;" and it is still known in French glass-houses as *savon de verriers*. Formerly it was called *Magnesia vitrari-orum* or *Magnesia nigra*. But Scheele, in his elaborate investigation of the mineral, showed that it was distinct from the various substances with which it had previously been confounded, and that it represented, in short, a peculiar earth.‡

In the course of his inquiry into the nature of this substance, Scheele subjected the manganese-ore to the action of various acids, including the *spiritus salis*. It was this experiment that led to the discovery of chlorine. When the

* *The Chemical Essays of Charles William Scheele*. London, 1786. Preface by Dr. Beddoes, of Edinburgh, p. vi.

† "Om Brun-sten eller Magnesia, och dess Egenskaper." *Kongl. Vetenskaps Akademiens Handlingar*, 1774, pp. 89-116.

* See "The Chemical Elements," by J. Norman Lockyer. *Nineteenth Century*, Feb. 1879, p. 285.

manganese was digested in spirit of salt—or *marine acid*, as it was also called in those days—Scheele observed an effervescence, due to the escape of a yellowish vapor which possessed a very pungent odor resembling that of warm *aqua regia*. This curious kind of "air" he collected in a bladder, which was tied to the neck of the vessel in which the manganese and acid were exposed to heat. He was thus enabled to examine the vapor, and especially to observe its powerful bleaching action upon vegetable colors—a property which has since given to chlorine so much of its industrial importance.

The reaction which occurs during the preparation of the chlorine was interpreted by Scheele according to the lights of his day. At that time the famous phlogistic theory was flourishing, and Scheele explained the reaction by assuming that the manganese attracted phlogiston from the acid, while the residue was the suffocating yellow gas. This gas being therefore nothing but the marine acid deprived of its phlogiston, what more logical than to call it *dephlogisticated marine acid*? And such, in fact, was the name under which chlorine was originally introduced to the chemical world.

A careful inquiry into the nature of this gas led the French chemist, M. Berthollet, to take a different view of its constitution.* Turning his back upon the phlogistic doctrine, he regarded the chlorine as a combination of the marine or muriatic acid with oxygen. Hence, when Lavoisier and his friends revised the chemical nomenclature of their day, they suggested the term "*gaz acide muriatique oxygéné* au lieu de *gaz acide marin déphlogistiqué*."† Even this new name soon took another shape when introduced into England, for Mr. Kirwan conveniently reduced the expression *oxygenated muriatic acid* to *oxymuriatic acid*. It was under this name that chlorine continued to be distinguished up to the time of Davy's classical researches.

Before referring to Davy's views on the elementary nature of chlorine, it should be mentioned that the two eminent French chemists, Gay-Lussac and Thénard, had suggested, prior to the publication of Davy's paper, the possibility of chlorine being a simple form of matter. Referring to the fact that this gas is not decomposed by carbon, they remark that "on pourroit d'après ce fait et ceux qui sont rapportés dans ce mémoire, supposer que ce gaz est un corps simple."* Nevertheless they rejected such a supposition, and clung to the old belief in its compound nature, under the impression that it offered a more plausible explanation of the phenomena under discussion.

On November 15th, 1810, Sir Humphrey Davy read before the Royal Society the famous Bakerian lecture, in which he described the series of researches that led him to regard the yellowish vapor of Scheele as an elementary substance.† In this discourse he shows that "the body improperly called, in the modern nomenclature of chemistry, *oxymuriatic acid gas*, has not as yet been decomposed; but that it is a peculiar substance, elementary as far as our knowledge extends, and analogous in many of its properties to oxygene gas." It is worth noting, however, that he carefully avoids giving a direct denial to the statements of those who still held that the chlorine might be an oxygenated compound; for in taking exception to some experiments by Mr. Murray, of Edinburgh, he cautiously remarks, "There may be oxygene in oxymuriatic gas, but I can find none."

After Davy had given to the world his views on the chemical simplicity of chlorine, it took some time for them to gain general acceptance. Berzelius, for example, steadily resisted them for many years; and in France they were strongly opposed by Berthollet, though such men as Gay-Lussac and Thénard had become converts. In time, however, even

* *Mémoire sur l'acide marin déphlogistiqué*, par M. Berthollet. *Mémoires de l'Acad. Roy. des Sciences*, année 1785, p. 276.

† "*Méthode de Nomenclature chimique proposée par MM. de Morveau, Lavoisier, Berthollet et de Fourcroy*." *Observations sur la Physique*, juillet 1787, t. xxxi. p. 210.

* "*De la nature et des propriétés de l'acide muriatique et de l'acide muriatique oxygéné*." *Mémoires de Phys. et d. Ch. de la Soc. d'Arcueil*, 1809, t. ii. p. 357.

† "*On some of the Combinations of Oxymuriatic Gas and Oxygene, and on the Chemical Relations of these Principles to Inflammable Bodies*." *Philosophical Transactions*, 1811, p. 1.

Berthollet was converted; and, writing in 1816, he publicly expressed his concurrence in the generally accepted view.

After referring to the fact that Gay-Lussac, Ampère, and Dulong had, for some years, taught in their lectures that chlorine was an element, he makes a remark which is worth quoting, since it exposes the jealousy between the French and English chemists of that day. "Ils [Gay-Lussac and the others] ont bien droit à prétendre qu'ils ont les premiers regardé le chlore comme un être simple, quoique M. Davy ait le premier établi publiquement cette opinion, et sans connaître ce qui avait précédé."*

When Davy had convinced himself of the elementary nature of the so-called oxymuriatic acid, he naturally looked about for a more appropriate name. In his Bakerian lecture he tells us that, "after consulting some of the most eminent chemical philosophers in this country, it has been judged most proper to suggest a name founded on one of its obvious and characteristic properties—its [greenish-yellow] color—and to call it *chlorine* or *chloric gas*."

The shock which has lately disturbed our faith in the soundness of Davy's views as to the elementary nature of chlorine has come from the researches of Professor Victor Meyer and Herr Carl Meyer, of Zurich, and is a direct consequence of their determination of the density of chlorine at high temperatures.

It is frequently required in chemical researches to ascertain the specific gravity of a substance when in the state of vapor, or, in other words, to determine its "vapor-density." Organic chemists especially have recourse to this operation in order to throw light upon the constitution of the various compounds which they prepare, and are therefore grateful for any means of simplifying the process. Some time ago Victor Meyer devised an ingenious method which is at once simple in principle and rapid in execution. It is by means of this new method that the density of chlorine at high temperatures was examined.

In Meyer's method, the specific gravity of the vapor is determined in a cylin-

dric glass vessel, to which is affixed an upright glass tube closed at the top with a caoutchouc stopper, and furnished at one side with a narrow delivery tube for the escape of air. The vessel may be raised to the required temperature by heating it in a bath of vapor or of liquid, having a proper boiling-point. If a very high temperature be required, as in the chlorine experiments, a gas furnace is used as a source of heat, and the bulb is constructed of porcelain. When the vapor-density of a solid or of a liquid is to be taken, the specific-gravity vessel is heated to the temperature necessary to volatilize the substance under examination. A weighed quantity of the substance is then cautiously introduced into the vessel, and the orifice at the top is immediately closed. The heat converts the body into vapor, and this vapor chases the air out of the vessel through the lateral delivery tube. The amount of extruded air is determined by collecting it in a graduated vessel standing over water, beneath which the end of the delivery-tube dips. Having thus measured its volume, and knowing also the temperature and pressure, together with the weight of the substance employed, it is easy to calculate the density of the vapor. Should the presence of air be objectionable, the apparatus may be filled with nitrogen.

With this simple apparatus Professor Meyer determined the vapor-density not only of numerous organic and inorganic compounds, but also of several of the elements, at various temperatures up to about 1567° centigrade. Even at this temperature he found that the vapor-densities which he obtained conformed fairly with those deduced from theory. All went on well, in short, until he turned his attention to chlorine, when a glaring anomaly soon presented itself.

At about 620° the density of chlorine, referred to air as unity, agreed with its calculated density of 2.45. But on raising the temperature the specific gravity unexpectedly diminished. At 808° it was between 2.21 and 2.19. At 1028° it sank to between 1.85 and 1.89. On elevating the temperature to 1242° the density was reduced to 1.65 or 1.66, but at still higher temperatures it was found to remain tolerably constant. Thus at 1392° it was still 1.66 or 1.67, and even

* "Note sur la composition de l'acide oxymuriatique." *Mémoires de la Soc. d'Arcueil*, t. iii. p. 603. Memoir read April 10, 1816.

at the maximum temperature of 1567° it remained about 1.60 or 1.62.*

Now, the diminution of density may be explained in one or other of two ways; it may be either physical or chemical. From the figures which have just been cited, it will be seen that, at high temperatures, the density of chlorine is only two-thirds of its density at the normal temperature. It is clear, therefore, that every two volumes of the gas must have expanded to three volumes. Such an expansion is precisely the same as that which occurs when ozone is transformed into ordinary oxygen. It has generally been admitted, since the researches of Sir B. Brodie, that ozone is condensed oxygen. While oxygen is but sixteen times heavier than hydrogen, bulk for bulk, ozone is twenty-four times heavier. There is reason to believe, indeed, that the molecule of oxygen contains two atoms, while the molecule of ozone contains three atoms. In the language of modern chemistry a *molecule* is a group of *atoms*, representing the smallest quantity of a substance capable of existing in a free state. Since the molecule of ozone occupies only the same space as the molecule of oxygen, it is obvious that whatever volume be occupied by two molecules of ozone must become a volume and a half when the two ozone molecules are converted into three molecules of oxygen. As an expansion to exactly the same extent is shown by Meyer to occur when chlorine is strongly heated, it might seem reasonable to assume that in this case the increment of bulk is due to a similar physical change.

There are, however, theoretical considerations which forbid so simple an explanation of the phenomenon in question. The chemist is therefore driven to believe that the increased bulk is due to a multiplication of molecules consequent upon the *dissociation* of the chlorine—that, in fact, the two molecules of chlorine are resolved at a high temperature into three molecules of some simpler forms of matter. If the chlorine can thus be decomposed by heat, is it possible to determine what are its components?

In the original paper by Victor and

Carl Meyer, previously cited, no mention is made of any attempt to answer such a question; but some interesting suggestions, helping us towards an answer, may be gleaned from a discourse delivered by Professor Meyer before the Chemical Society of Zurich, and reported by Mr. Watson Smith,* as also from other information supplied by Mr. F. Barkas, of the Zurich Polytechnic.† On passing the expanded gas into a liquid which absorbs chlorine, such as mercury or a solution of iodide of potassium, it was found that a small proportion of gas always remained unabsorbed. This residual fluid proved to be *oxygen*! Assuming that no source of error has crept in, the obvious inference is that chlorine is an oxygenated compound, and that a portion of the oxygen may be set free at a sufficiently high temperature.

It should be noted that extraordinary care appears to have been taken by the Zurich chemists to guard against the introduction of error in these experiments. The chlorine was prepared, free from all contamination, by the action of heat on pure platinous chloride. Nor was any pains spared in thoroughly drying the gas. It was conceivable that at a very exalted temperature the chlorine might act upon the unglazed porcelain vessel in which the density was determined, and might thereby evolve oxygen. Experiment has shown, however, that the vessel is not attacked under the conditions which obtained in these researches. Again, it has been suggested that the finely divided platinum left on the decomposition of the chloride might be volatilized; but this objection has been satisfactorily disposed of by direct appeal to experiment. In short, it is difficult to detect the smallest loophole through which error could possibly gain entrance in the course of this investigation.

It has been pointed out by Dr. Armstrong that the alleged discovery of Meyer is quite in accordance with the results of Mr. Lockyer's spectroscopic study of chlorine; for this physicist

* Behavior of Chlorine at a High Temperature, or results of Viktor Meyer's recent Researches," *Chemical News*, vol. xl. No. 1027, p. 49. Meyer himself has borne witness to the accuracy of this report.

† *Ibid.*, No. 1044, p. 263.

* "Ueber das Verhalten des Chlors bei hoher Temperatur." *Berichte der deutschen Chemischen Gesellschaft*, 1879, No. 12, p. 1426.

found that under certain conditions "the red line of oxygen is one of the most prominent lines in the spectrum of chlorine."*

Assuming that chlorine is an oxidized body, it has been proposed to call the hypothetical element, of which it is an oxide, *Murium*. There is no need, however, to alter the name of chlorine itself, since this name merely denotes the color of the gas without connoting anything about its constitution. Indeed, Davy, foreseeing the possibility of future contradiction to his own views on the elementary nature of chlorine, selected a name which in that event should still be unobjectionable. "Should it hereafter be discovered to be a compound, and even to contain oxygen, this name," said Davy, "can imply no error, and cannot necessarily require a change."†

If the researches of Meyer should be corroborated by those of other investigators, attention will, of course, be directed to the behavior of the chemical congeners of chlorine. Chlorine is but one member of a very natural family, known as the *Halogens*, comprising bromine, iodine, and fluorine. When one halogen has been dissociated at a high temperature, it is almost fair to expect that the others may be dissociated under similar conditions. Professor Meyer has, in fact, found that iodine behaves similarly to chlorine, and has thus lent some support to the conjecture that the whole family of halogens may some day be blotted out of our list of chemical elements.

While Professor Meyer has been engaged in experimenting on the dissociation of chlorine, Professor Raoul Pictet, of Geneva, has been independently speculating on the possibility of decomposing some of the other non-metals, by means of heat.‡ It will be remembered that it was this physicist who first accomplished the feat of liquefying oxygen. M. Pictet appears to have been led to his present views on dissociation by

considering the striking fact that while the solar spectrum has so much to say as to the presence of a number of metals in the sun, it is almost mute when questioned as to the non-metals. If the non-metals exist in the sun, most of them are probably dissociated by the high temperature to which they are exposed, and M. Pictet has therefore exercised his ingenuity in devising means for producing a higher temperature than any heat which we can command in our laboratories.

When heat-waves pass from one body to another, separated by a considerable distance, the period of vibration, or wave-frequency, will remain unchanged during the transmission. On encountering the second body, the waves tend to throw its molecules into oscillation in unison with the original vibrations. If the receiving body be free from external influences which would modify its temperature, it will gradually acquire exactly the same temperature as that of the body from which the vibrations originally proceeded. The two centres of radiation will then be in a condition of thermic equilibrium. As these phenomena are independent of the distance between the emitting and the receiving body, they may be supposed to obtain between the sun and the earth. The solar rays, therefore, preserve their period of vibration until they reach the earth, where they tend to produce a temperature equal to that of the sun itself. Hence Professor Pictet proposes to concentrate the solar rays, by means of an enormous mirror, upon the substance which he desires to decompose; and at the same time he prevents, as far as possible, all loss of heat by radiation or by conduction.

On the hypothesis that most of the non-metals exist in the sun in a state of dissociation, the terrestrial non-metals ought also to suffer decomposition if they can be brought, by means of solar radiation, into thermal equilibrium with the sun's surface. To obtain this equilibrium, Professor Pictet proposes to construct a silvered-copper parabolic mirror of gigantic size. He calculates that the diameter of this mirror should not be less than ten metres. It is needless to follow him into the details of its mechanical construction, which are dis-

* "The Dissociation of Chlorine." *Nature*, vol. xx. No. 511, p. 357.

† Bakerian Lecture, 1810. *Phil. Trans.* 1811, p. 32.

‡ "Considérations sur la possibilité expérimentale de la Dissociation de quelques Métaux." *Archives des Sciences physiques et naturelles* (Geneva), No. 10, 1879, p. 377.

cussed at some length in the memoir cited above.

The rays reflected from such a mirror would not converge to a true focal point, but would be spread over a circular surface about eight or ten centimetres in diameter. Knowing the amount of solar radiation received by the earth in a given time, he estimates that about one thousand calories (French thermal units) per minute would be thrown by the mirror upon this focal space. This heat would be distributed in three ways. In spite of all precautions, the greater part would inevitably be lost by radiation. Another part would be carried off by conduction, since the chamber which would be placed in the focus—the *chambre solaire*—must needs be supported, and the supports would steal away some of the heat. Finally, there would remain a fraction of the original heat available for the decomposition of bodies placed in the solar chamber.

This chamber, which would resemble a great sphere about one metre in diameter, should be constructed of the most refractory materials at our disposal, such as lime and zirconia. The substances to be operated upon would be introduced into the chamber through a tube of zirconia, which must descend to such a depth as to deliver the substance, in a state of vapor, at the point where the heat attains to its greatest intensity. When the vapor passes through the zone of maximum heat, the eventful moment arrives, and it is expected that the body would then suffer dissociation. If dissociation did occur, and if the two component vapors which would probably result from the decomposition differed from each other in density, a fraction of one of the vapors would certainly be separated from the other by means of diffusion. To prevent this liberated element from re-combination, it would be caused to pass through a large metal tube containing wire-gauze, and surrounded by a refrigerating apparatus, whereby its temperature could be reduced to -56° centigrade. In this tube the eliminated element might possibly condense, or even crystallize. Professor Pictet has such faith in the soundness of these views that, if the expense of constructing such apparatus were within his means, he would immediately put his speculations to the test of experiment.

It is well known that the *actinism* or chemical action of the solar spectrum—as determined, for instance, by its effect upon a sensitive photographic surface—is far from being equally distributed throughout the luminous image. Nor is the maximum of chemical action coincident with the maximum of luminosity; in other words, the seat of the greatest photographic potency is not in the brightest part of the spectrum. Moreover, the chemical activity, instead of ceasing at the limit of the visible spectrum, stretches, to a greater or less extent, beyond the violet end; and Captain Abney has shown that it may also be detected beyond the red end. The ultra-violet portion of a spectrum, consisting of rays of higher refrangibility than those which excite vision, varies considerably in magnitude, according to the source of light which is subjected to analysis. The electric light is so rich in these extra-visual rays that, if its spectrum fall upon a surface prepared with chloride of silver, the image may be prolonged to four or five times the length of the visible spectrum.

It is found that these chemical rays can pass freely through certain media, but are powerfully arrested by others. Those substances which are chemically transparent are said to be *diactinic*, while those which are chemically opaque are, of course, *adiactinic*. Because a body allows a free passage to the luminous rays, it by no means follows that it will also offer a free passage to the chemically active rays: a body may be optically transparent, yet chemically opaque. Thus, colorless glass exerts great absorptive action upon the chemical rays; and hence the practice of using prisms and lenses of rock-crystal, instead of glass, when experimenting upon the diactinic properties of various substances.

Our knowledge of actinic absorption was originally due to the researches of the late Professor W. A. Miller; and his investigations have lately been taken up and extended by Professor Hartley, now of Dublin, and Professor Huntington, of King's College, London.* The

* "Researches on the Action of Organic Substances on the Ultra-violet Rays of the Spectrum." *Philosophical Transactions*, 1879, p. 257; part iii. in *Proc. Roy. Soc.* No. 198, p. 290.

object of these investigators was primarily to determine whether any, and, if any, what, relation exists between the molecular constitution of an organic substance and its actinic absorption. They therefore examined *homologous* series of alcohols and acids—that is to say, series in which the successive members differ from each other by an amount of carbon and hydrogen indicated by CH_2 . In such a series we generally expect to find a regular gradation of physical properties in the consecutive terms; nor is this law broken by their diactinic properties. In fact, for every increment of CH_2 in the molecules of such alcohols and acids as were examined, there was found to be an increased absorption of the more refrangible rays.

Great care was taken in these delicate researches to insure purity in the substances under examination. Methylic alcohol, when absolutely pure, proved to be almost as chemically transparent as water. Messrs. Hartley and Huntington have found that the photographic absorption-spectra are in many cases so characteristic as to be capable of employment in the identification of organic substances, and are useful as a most delicate test of their purity. The examination of various essential oils has thrown much light upon the constitution of these bodies. The spectrum was photographed, not only when the liquid under examination was in a state of purity, but also when diluted with various known proportions of alcohol. This process of dilution enabled the experimentalists to detect the presence of the aromatic series in the essential oils, and even in certain cases to estimate the amount of the substances which are thus present.

It appears, from a remarkable accident which occurred a few months ago in a French coal-pit, that a new source of danger must be added to the long catalogue of perils which beset the miner in the prosecution of his underground work. The attention of the French Academy of Sciences has been called to the peculiarities of this accident by M. Delesse, whose explanation of the origin of the catastrophe is of much scientific interest. The accident occurred at the Rochebelle Colliery in the Département du Gard—a mine which had always been

so free from fire-damp that the miners were in the habit of working with naked lights.

On the 28th of last July some miners in one of the galleries of this colliery heard a short, sharp explosion, which was followed in less than a minute by a second detonation more violent than the first. The lamps were immediately extinguished, and the miners experienced such giddiness as to render their escape difficult. Nevertheless they managed to reach the cage, and were brought in safety to the surface. In one of the other galleries, however, three men were killed by suffocation.

On attempting to enter the mine after the accident, it was found that the workings were filled with carbonic acid gas, and ingenious devices of various kinds were adopted in order to effect its removal. When at length it was possible to gain access to the galleries, it was seen that vast quantities of coal had been broken down by the explosion, and projected to a considerable distance from the working-face.

Although it was at first naturally thought that the accident was due to an ordinary explosion of fire-damp, a slight examination was sufficient to convince the engineers that this was not the case. The bodies of the men who were killed by the explosion showed no trace of the effects of fire; some gunpowder and cartridges in the neighborhood had not been exploded; and, in short, everything went to show that the detonation was not accompanied by flame.

After a careful study of all the circumstances connected with this disaster, the engineers have come to the conclusion that it arose from the sudden disengagement of large volumes of carbonic acid gas, which, issuing from the coal with explosive violence, swept down not less than seventy-six tons of coal, and filled the workings with a deadly atmosphere. It had long been known that carbonic acid was slowly evolved from the coal in this mine, and great care was consequently taken to secure efficient ventilation. But never before had the gas been known to exist in the mineral in so condensed a state as to rend the face of the coal, and to stream forth with explosive force.

What could possibly be the source of

so large a quantity of this gas? Carbonic acid, like carburetted hydrogen or fire-damp, is formed during the conversion of vegetable matter into coal; but it is hardly to be supposed that so great a volume would remain pent up in the pores of the coal as must have been set free by this explosion. Another source of carbonic acid is found in the exhalations of volcanoes. In old volcanic districts the gas frequently issues from crevices in the rocks; in the neighborhood of Vichy and Hauterive, for example, the gas is disengaged in such large quantity, and the supply is so constant, that it has actually been utilized in the manufacture of white-lead. Again, at the lead-mine of Pontgibaud, in the old volcanic district of Auvergne, and in the coal-mine of Brassac, this gas is constantly being evolved. But in the neighborhood of Rochebelle there are no lingering vestiges of volcanic activity, and we are consequently forced to seek another source of the carbonic acid which made its unexpected appearance in this colliery.

A careful study of the geology of the district has finally led to the conclusion that the gas in the Rochebelle mine must have been disengaged by the action of acid waters upon calcareous rocks. In the neighborhood of the mine there is a large deposit of iron pyrites. This pyrites, by slow oxidation through atmospheric influences, is constantly producing sulphuric acid, which, dissolving in the subterranean waters, is carried down to the underlying rocks. In its underground course it meets with the subjacent Triassic limestones, and chemical action is at once set up. The carbonic acid which is thus slowly evolved by the action of the acid on the calcareous rock is greedily absorbed by the coal, which is not only porous, but is broken up and fissured in all directions. In the cracks and crevices of the coal the gas gradually accumulates, and its pressure increases, until it eventually attains sufficient tension to burst forth with disruptive violence, producing such devastation as that which accompanied the Rochebelle explosion.*

* "Explosion d'acide carbonique dans une mine de houille." Note de M. Delesse, *Comptes Rendus*, t. lxxxix. No. 20, Nov. 17, 1879, p. 814.

In connection with this colliery accident, attention may be called to the explosion of a diamond, which may perhaps be referred to a similar cause—namely, to the sudden outburst of a volatile fluid which was enclosed in the mineral in a state of great tension.

Professor Leidy has exhibited, before the Academy of Sciences of Philadelphia, a sleeve button bearing a rose diamond which had exploded under the influence of sunshine.* It appears that the person who wore this button was one day startled by hearing a distinct report, due to the sudden rupture of the stone. The diamond was rent along a cleavage plane, and the fracture disclosed a dark particle of carbonaceous matter. It is believed that the explosion resulted from the rapid expansion of a volatile liquid enclosed in a cavity. Many crystals contain cavities which enclose volatile liquids, such as condensed carbonic acid. Sir David Brewster found that some diamonds contain so many microscopic cavities that they impart a dark color to the mineral. It is probable that the liquids and gases which are pent up under great tension in such cavities would exert considerable pressure outward; and indeed the behavior of certain diamonds under polarized light seems to show that parts of the stone are in a state of great strain. It is easily conceivable, then, that the tension of the enclosed fluid might go on increasing until the diamond, no longer able to resist the strain, would give way with explosive violence.

In a recently published memoir on the *Foraminifera* of the Challenger, Mr. H. B. Brady† devotes some pages to a summing up of the question, so much discussed of late years, as to whether these organisms live both on the sea bottom and at the surface.

Up to a comparatively recent period it was thought that the *Foraminifera*, under ordinary circumstances at any rate, lived on the sea-bottom; in several isolated instances, however, specimens were taken at the surface, and the ex-

* "Explosion of a Diamond." *Philosophical Magazine*, Supplementary number, Dec. 1879, p. 572.

† "Notes on some of the Reticularian Rhizopoda of the 'Challenger' Expedition." *Quart. Jour. of Micros. Sci.*, July, 1879.

tensive series of gatherings made by Major Owen showed, beyond the possibility of doubt, that several species of *Globigerina*, *Orbulina*, and *Pulvinulina* are pelagic; that they live and multiply at the surface, and that, when dead, their skeletons fall to the bottom, and form the well-known globigerina-ooze, of which a large part of the sea-bottom is composed.

It then became a question whether the calcareous *Foraminifera* were exclusively pelagic, or whether some forms might not have their regular habitat on the sea-bottom, even at great depths, the latter opinion being supported by several observers who found the sarcod or protoplasm still contained in the shells of dredged specimens.

The facts brought forward by Mr. Brady seem to show very clearly that this is actually the case. A tolerably weighty piece of negative evidence is afforded by the fact that, after all the extensive series of observations which have been made on the surface fauna, only a very few out of the numerous species of *Foraminifera* have been taken in the tow-net; all the others have been obtained exclusively by dredging, that is, from considerable depths.*

Many forms of *Foraminifera* do not secrete a shell of carbonate of lime, but build up for themselves one of sand grains. It is evident that these arenaceous forms must live at the bottom to obtain the materials for their skeleton, and there is, therefore, no improbability that porcellaneous and hyaline species may be able to exist under like conditions.

An important argument is also to be deduced by the comparison of surface and bottom specimens, rendered possible by the largeseries of gatherings made in the Challenger. It is found that the largest pelagic *Globigerinae* are markedly smaller than average-sized specimens from the sea-bottom, and that the shells of the former are very much thinner than those of the latter—often less than half, and rarely more than two-

thirds, as thick. In *Orbulina* the difference in the size of the shells is less marked, but, as in *Globigerina*, the species from the bottom have shells of much greater thickness, and often exhibiting a laminated structure, never found in pelagic forms.

Another fact of some importance is that shells of *Globigerina* are found in the stomachs of some of the deep-sea brittle-stars; but the most convincing proof of all is that, by dissolving the shells of dredged specimens with acid, the protoplasmic bodies have been obtained in a thoroughly good state of preservation. This Mr. Brady has been able to do with material obtained by the very useful method adopted in the Challenger, of attaching a tow-net, such as is used for surface-collecting, to a trawl. It is quite true that the specimens thus obtained have never been seen to extrude their pseudopodia or show any other signs of life; but, as Mr. Brady points out, this can hardly be expected in animals subjected to such an entire change of surroundings as are these *Foraminifera* when brought to the surface from a depth of many hundred or even thousand fathoms.

Altogether, the balance of evidence seems to show, as Mr. Brady says, "that organisms so simply constituted as this group of *Protozoa* may be equally at home at the surface and at the bottom of the ocean;" so that among the *Foraminifera*, as in many other groups of the animal kingdom, closely allied forms are found living, on the one hand, on the surface, exposed to light, to varying temperatures, and to slight pressure, and, on the other hand, at great depths, where light is absent, the temperature uniform, and the pressure immense.

One of the most striking results of modern anatomical and embryological research has been to show that the higher groups of animals, the echinoderms, mollusks, arthropods, and vertebrates, are all derivable from some modification of the worm type. Amongst other facts having an important bearing upon this question, we may mention the discovery of segmental organs in vertebrates, the resemblance of the larvæ of echinoderms and of many mollusks, notably brachiopods, to worm larvæ, and the

* Mr. Brady gives a list of the species now known to be pelagic. They are—*Globigerina*, 6 species; *Orbulina*, 1 sp.; *Hastingerina*, 1 sp.; *Pullenia*, 1 sp.; *Sphaeroidina*, 1 sp.; *Candeina*, 1 sp.; *Pulvinulina*, 4 sp.; *Cymbalopora*, 1 sp.; and *Chilostomella*, 1 sp.

close similarity between worms and vertebrates in the mode of development of the nervous system and of the mesoblast.

One of the most remarkable of these worm affinities was brought out by the investigations of Mr. Mosely on *Peripatus*, a caterpillar-like creature formerly placed among the worms. Mr. Mosely showed that *Peripatus* possessed tracheæ, structures hitherto known only in the air-breathing *Arthropoda*; and the genus is now, in consequence of this discovery, placed in that sub-kingdom as the single example of the *Protracheata*, the nearest living representative of the worm stock from which myriapods, arachnids, and insects may be supposed to have sprung.

As bearing on the affinities of *Peripatus*, on the one hand with worms, and on the other with arthropods, some recent discoveries of Mr. Balfour* are of the greatest importance. In all the *Tracheata*, the excretory organs consist of numerous blind tubes—the Malpighian tubules—opening into the hinder part of the intestine; while, in worms, the excretory function is performed by the "segmental organs," coiled tubes, one pair to each somite, at one end opening on the external surface of the body, and at the other either opening into the body cavity or terminating blindly.

The differences between worms and *Tracheata* in the matter of excretory organs being so great, it is interesting to find that the least modified tracheate animal, *Peripatus*, has segmental organs in essential particulars quite like those of many worms, particularly the leeches. Each organ consists of a coiled glandular tube, connected at one end with a short tube of somewhat different character, and probably opening into the body cavity, and at the other end dilating into a vesicle which opens on the surface of the body at the base of the corresponding foot.

A point of less, but still of considerable, importance is the interpretation given by Mr. Balfour to the organ usually considered as a fat-body. He shows that it is in reality a gland, opening by a duct into the mouth, and comparable with the simple salivary gland of the

millipede. As salivary glands are highly characteristic of *Tracheata*, while they are altogether absent in worms, the homology thus suggested indicates a new and unexpected affinity with *Arthropoda*.

An important inquiry on the pathology of starvation has been made by Surgeon D. D. Cunningham, of the Indian Medical Service, in relation to the recent famines in India, and the result of his researches is published in the current number of Professor Lankester's journal.*

With a view of directly observing the effect of diminished food supply upon protoplasm, Mr. Cunningham undertook an elaborate series of experiments upon easily observable plants and animals, selecting for his purposes two common moulds, *Choanephora* and *Pilobolus*, and the tadpoles of a toad (*Bufo melanostictus*), and of a frog (*Rana tigrina*), all of which were kept for a longer or shorter period in freshly distilled water, and the effect upon their tissues of the deprivation of food observed from time to time.

The fresh hyphæ of the fungi were filled with cloudy protoplasm, containing vacuoles, and here and there highly refracting granules of an oily nature. Replacement of the nutritive solution by distilled water produced an entire change; the oil-globules gradually accumulated, the protoplasm at the same time undergoing disintegration, until, at the end of twelve hours, the hypha contained a mere network of protoplasmic threads crowded with bright fat-granules. These further accumulated, and the network disappearing altogether, were set free in the cavity of the hypha, often uniting into large oil-globules.

These experiments showed, therefore, that starvation, in the two moulds investigated, was accompanied by fatty degeneration, followed by entire disintegration of the protoplasm.

In the tadpoles, the parts to which attention was more particularly directed were the tissues of the tail and of the alimentary canal, both of which are readily observable in the fresh and unaltered state.

Under normal conditions, a certain

* "On certain Points in the Anatomy of *Peripatus capensis*." *Quart. Jour. of Micros. Sci.*, July, 1879.

* "On certain Effects of Starvation on Vegetable and Animal Tissues." *Quart. Jour. of Micros. Sci.*, January, 1880.

small proportion of the cells in the deep layer of the epiderm undergo a peculiar process of fatty change. They enlarge greatly, and become completely filled with oil-globules, which are eventually discharged, leaving a conspicuous cavity in the position formerly occupied by the cell. This process, a local and occasional one during health, goes on through the whole of the deep layer of epiderm in starvation, so that this layer is at last converted into a mere network of filaments, with granular cells in its meshes, all traces of the normal cells having vanished. As in the plants, the protoplasm has undergone complete fatty degeneration.

A similar process was observed to take place in the amœboid cells of the connective tissue beneath the epiderm. They become so completely crammed with oil-globules, that, when treated with ether, hardly any protoplasm is left—only the merest shadow of what was once a cell.

The blood-corpuscles suffered a like fate. Oil-globules appeared in them, and increased in size and number until they became conspicuous even under low powers; the coloring matter of the corpuscles disappeared, and the corpuscles themselves, breaking up, discharged their contained oil-globules into the plasma.

The wall of the intestine of the tadpole consists of an outer layer of muscle, then one of adenoid tissue, consisting of a protoplasmic network with nuclei in its meshes, and finally of a single layer of columnar epithelial cells bounding the cavity.

During starvation, the same deposit of fat took place in the nuclei of the adenoid tissue, and in the epithelial cells, as has been described in the various tissues of the tail. The changes were most marked in the epithelium, the cells of which, after undergoing the usual fatty change, were completely destroyed, the particles set free by their disintegration being passed into the cavity of the intestine, the inner surface of which was, in this condition of things, formed by adenoid tissue. In the nuclei of the latter a great deposit of pigment, as well as of fat, took place; this was probably derived from the broken-up blood-corpuscles.

Along with these changes in the constituents of the intestine, a general atrophy of the whole tube was observed, its length being diminished by more than one-half, and its diameter by more than a third.

These experiments show that, in animals as well as in plants, starvation is accompanied by fatty degeneration of the tissues, this degeneration, in the case of animals, reaching its maximum in the lining cells of the digestive canal, which are, if the supply of food is withheld for a sufficient time, completely swept away, leaving the canal devoid of epithelium, and consequently incapable of performing any longer its functions of secretion and absorption. It is evident that, when this stage is reached, the result must be fatal; as long as the epithelium is left, even in a degenerated condition, recovery is possible, but after it has once been destroyed no amount of food will serve to prolong life.

In the concluding section of his paper, Mr. Cunningham draws a comparison between the results of these experiments and those of the numerous *post-mortem* examinations made by him on the patients who died in the relief camps established in Madras during the famine. It was a common case that people coming into the camp in an advanced state of starvation, but with no symptoms of actual disease, were attacked by diarrhoea and dysentery, which were almost sure to be fatal. The cases afforded, in fact, a striking example of what has long been recognized as one of the most important results of starvation, a complete incapacity for assimilation.

The *post-mortem* examinations showed that, just as in the case of the batrachian larvæ, the result of starvation was a fatty degeneration, followed by a complete destruction of the tissues particularly of those of the alimentary canal; so that, the epithelium being actually destroyed, food taken into the intestine could no longer be digested and absorbed, but acted merely as an irritant on the abraded surface. So long as the sufferers from extreme starvation took only their usual small amount of nutriment, no active symptoms were produced; but, as soon as they were admitted into the relief camps, and experienced the change to a more copious and

generous diet, famine-diarrhœa and famine-dysentery set in, and finished what starvation had begun. The most careful dietetic régime was found to be ineffectual in these advanced cases; as long as only slight changes in the tissues had taken place, a judicious supply of food might serve to counteract the effects of privation, but, as soon as extensive destruction of the mucous membrane had set in, no amount of care was of the slightest avail.

The importance of these results, checked as they were by careful observation of the uncomplicated cases of starvation afforded by the experiments

already described, will be plain to every one. As Mr. Cunningham remarks at the end of his paper—

"The insidious character of the mischief has a most important bearing on the practical question of the management of famines. Due to it, relief camps may, to a great extent, be rendered useless by the people failing to have recourse to them until it is too late. They too, are likely to be deluded by the idea that, when no active symptoms have appeared, no permanent damage has been done, and that they may safely delay until their distress has counterbalanced their natural inertness and dislike of disturbing their ordinary habits."

—The Nineteenth Century.

CYMBELINE IN A HINDOO PLAY-HOUSE.

BY HAROLD LITTLEDALE.

BARODA, January 19, 1880.

THE festivities at Baroda in celebration of the marriages of H. H. the Gaikwar to a Tanjore princess, and his sister, Tara Bai, to the Prince of Savantwari, have been carried out on a scale of magnificence unusual even in ceremonious India. For a month there was nothing but amusement; business stood still; the schools were closed; rajahs and sirdars assembled from all parts to honor the solemnities, and many English visitors enjoyed the hospitality of H. H. the Maharani Jamna Bai Saheb. Nor was there any lack of variety: illuminations, fêtes, shows, fireworks, durbars, reviews, hunting expeditions, picnics, balls, nautches, banquets, and similar *támashas* (amusements), varied the monotony of station life.

Besides the performers hired for the occasion, the festivities attracted to Baroda many itinerant artists: jugglers, snake-charmers, dancers, acrobats, and, not the least interesting, a company of strolling players.

Through the kindness of an Indian gentleman, I was enabled to be present at several distinctively native *támashas*, not witnessed usually by Europeans. One evening my friendly "intelligencer" wrote:

"The *Tara*, an adaptation in Marathi of Shakespeare's *Cymbeline*, will be acted in the theatre-house to-night at

nine. The fees for admission are, 2 rupees per seat for the first class, 1 rupee for the second, 8 annas for the third, and 4 annas for the fourth." Accordingly, provided with the needful rupees and a note-book, I arrived at the theatre at nine punctually. The performance had not begun, so I had time to make a careful survey of the situation.

The theatre was a temporary structure of bamboo-poles and canvas. The stage, a whitewashed sandbank forming an oval about three feet in height, twenty feet in breadth, and forty feet in depth, was partly concealed behind a drop-curtain, on which an elephant and tiger-fight was depicted, and by a proscenium of canvas, adorned with full-length portraits of three-headed gods and mythic heroes in strange attire. Three uprights—one of them a growing tree—on either side the stage, sustained the "foot-lights"—some twenty kerosene lamps.

The auditorium had been excavated from the sand in the form of an amphitheatre, sloping downward to three feet below the level of the stage. The audience, about five hundred Hindus, men and children (ladies seldom appear in such public places*), sat in semicircular rows, the first two classes on chairs and

* The following extract from the play-bill points a moral:

Respectable Ladies.....	4 annas.
Naikin wa Kasbin (i.e. disreputable ditto).....	8 "

couches, and the third on benches, while the fourth squatted placidly on the ground. Although the assembly was essentially Hindu, one only heard Guzerathi and Marathi spoken in the back rows, English being evidently the fashionable language among the occupants of the front seats. Like an English audience, they did not appear at all averse to chaff, and considerable merriment at the expense of an eminent physician (who sat next me) arose, when the Master Doctor Cornelius appeared in act i. sc. 6, and still more when some wag happened to discover a likeness between old Belarius and a gray-bearded "party" in the second seats.

The prominent rôle played by oranges in a British pit was here taken by *pan sopari*—all the audience, and most of the actors (especially Imogen!) chewing betel-nut vigorously throughout the whole performance.

From the playbill, printed in Marathi, I learned that the actors belonged to the Itchal Karanjikar Company (deriving the name apparently from Itchal Karanji in the southern Mahratta country); and that *Tara* had been translated by Vishnu Moreshvar Mahajani, M.A., head master of the Umraoti High School.

These bills, distributed gratuitously, contained a full outline of the plot. Except that the names of persons and places, and literary allusions, have been Indianized, the adapter has closely followed his English original.

The anachronism of having modern Italians in ancient Rome is got rid of by the cities being made fictitious. Britain has become Suvarnapuri (golden city), and Italy, Vijaipura (land of fame). The chief characters are named:

<i>Imogen</i>	TARA.
<i>Cymbeline</i>	SAMBHAJI.
<i>Guiderius</i>	SHIVAJI.
<i>Arviragus</i>	RAJARAM.
<i>Belarius</i>	MALHARRAO.
<i>Cloten</i>	MUKARRAO.
<i>Posthumus</i>	HAMBIRRAO.
<i>Iachimo</i>	KHANDUJI.
<i>Pisanio</i>	SADOBA.

Imogen's assumed name *Fidele* is literally rendered *Vishvasrao* (Faithful).

I learned also that the company's *répertoire* included versions of the *Comedy of Errors*, *Taming of the Shrew*, *Tem-*
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pest, and *Othello*, besides the *Shakuntala* and other Sanskrit dramas.

The spectators had no reason to complain of not getting their full money's worth, as the performance lasted for five hours and three quarters! (9.10 P.M. to 2.55 A.M.)

At ten minutes past nine the manager of the company, the leader of the chorus, in Marathi *Sutradhār* (Coryphaeus), two other singers, a couple of musicians playing a *satar* (cithara), and a *tabla* (tabor, tomtom), came before the curtain, and the overture—a hymn to the god Narayan that the play might be successful—began. The manager led the choric music, an excruciating performance, to my profane ears sounding most like an unavailing attempt to smother the squeals of two babies with the din of a bagpipe and a tin kettle.

After a few minutes, however,

Silence, like a poultice, came
To heal the blows of sound.

But only for a moment's space. The clown, grotesquely attired in red, and tricked out with leaves, waddled in and mimicked the hymn of the chorus.

The manager remonstrated, and some laughter-provoking chaff, after the manner of circuses, ensued. The hymn was resumed, the curtain rose, and revealed the god Ganpati, a vermilion-faced, elephant-trunked monster, with gold turban, blue and gold tunic, and white legs, seated on a very terrestrial-looking cane-bottomed chair, in front of an Indian house.

Ganpati directed the manager to sing in praise of Sarasvati (goddess of learning and the arts), and after the song a flash of stage-lightning announced the acceptance of the prayer.

Sarasvati, dressed in gold brocade, a peacock's head and neck projecting from her girdle, the tail-feathers fastened to her shoulders, and displayed in fan-shape above her head, next appeared; on her head a golden mitre, and kerchiefs waving in either hand, like wings.

The goddess danced a swift, spasmodic hornpipe, and vanished. The chorus struck up a hymn to the gods, and the prologue was over (10.5 P.M.).

Thus, as among other Aryan nations, the religious origin of the drama is indicated. This overture, traditional

from the earliest times, and slightly varied sometimes by the introduction of the Sutradhar's wife, is the indispensable preliminary to an Indian theatrical performance.

The play proper now began. As *Tara* is a close translation from *Cymbeline*, all description of the plot would be out of place. The departures only from the original need here be noted.

I must mention, however, one striking resemblance to the drama of Shakespeare's own time, and the Imogen of Shakespeare's day—all the female parts were acted by boys.

It would have been difficult for any actress to have given with more womanly feeling, or with a sadder and more pleading voice, the rendering of the part of *Tara* which I saw.

The audience must have been profoundly touched by the manner in which it was played, for in the cave scene, where Imogen lay seemingly dead, and was bewailed by the two boys, many of the spectators brushed aside their tears, while one old rajah fairly blubbered outright!

Much of this was no doubt a tribute to the original pathos of the character, but some share of credit for so powerfully exciting the emotion of pity must be given to the young actor himself.

Imogen (*Tara*, i.e. *Star*) being the central figure of the play, the adapter judiciously departs from his original in giving her name to the piece. He has shown equal discrimination in cutting out the whole of that most un-Shakespearean vision in Act v., his *Deus ex machina* being supplied by a voice from behind the scene. With less pleasing effect to one familiar with the English play, the famous dirge, "Fear no more the heat o' the sun," has been replaced by a long disquisition from old Belarius on the doctrine of metempsychosis.

The adapter has made the king a ludicrously contemptible personage, lorded over and bullied by his masculine queen. His uxoriousness, and especially his lamentations for his dear departed consort in the last scene, appeared to afford infinite amusement to the audience, henpecked husbands being no rarities in the East, despite the zenana system.

The part of Cloten has also undergone

considerable modification, and has been made more despicably idiotic. His absurdities were greatly heightened by the actor, who—though rather too conscious of his own comicalities, and speaking too manifestly at the audience—stuttered* in a manner that greatly tickled his hearers. In act ii. sc. 3, where the musician is asked to sing a "very excellent good concealed thing," Cloten provoked roars of applause by his instructions to the musician, and his preference for a song in which the musician burlesqued classical music. The fight between Cloten and Guiderius was made very absurd by Cloten's attempts, and his appeal to Guiderius for help to draw his sword from its sheath. The sword play would have astonished Mr Irving. The combatants, making no attempt at defence, and never allowing the swords to clash, danced round and struck each other alternately with the flat of the blades on their lumbar regions! Finally Cloten was driven off, his turban, which had belonged to Posthumus, falling on the ground. This turban, and not the headless body, is seen by *Tara*, and recognized as her husband's.

It should be noted also that, widows not remarrying as a rule in India, Cloten is made the queen's nephew, instead of being her "son by a former husband."

In reading the English play, I have always felt that there was something contemptible about Posthumus, and I was given the same impression of that character by the Marathi version. The actor, too, had hardly enough "presence" to dignify the part. The audience seemed rather horrified at the love-scenes between Imogen and Posthumus, for the well-regulated Indian wife, so far from running to embrace her husband, usually veils her face at his approach, ventures perhaps to peep timidly toward him from beneath the folds of her *sari*, but takes refuge in a corner if her lord become at all demonstrative in his affection. On the other hand, the spectators expressed loudly their warm approval of the women-hat-

* An interpretation probably of
"The snatches in his voice,
And burst of speaking."

Act. IV. Sc. 2.

ing sentiments uttered by Posthumus in act ii. sc. 4.—but, then, their wives were not present!

The Soothsayer in act. v. was replaced by a Brahmin astrologer, who promised victory to Iachimo's side if they took care to give the Brahmins a feed.

Indians being very little accustomed to sit on chairs, the actors seemed never comfortable when doing so; the men generally sat cross-legged, and the ladies, Imogen and the queen, invariably placed one foot on the chair, and tucked the knee under the chin in a manner more suggestive of comfort than elegance. The players seemed to be most at ease when standing erect and motionless. They used very little gesture, their action being declamatory rather than demonstrative. There was no ranting or raving, and even Posthumus, in his most infuriated tirades, maintained complete repose of body. The defect of gesture was hardly compensated for by the very artistic groupings of the characters in each scene, and the by-play was not always sufficiently distinct. As on the Elizabethan stage, the scenery and stage accessories were of the simplest description, but the costumes were extremely rich and beautiful. Two scenes, one, the exterior of an Indian house, the other, three palm-trees to represent the forest, and half a dozen common chairs, completed the stock of "properties."

The dresses, however, deserve description by the court newsmen's abler pen. The scene being laid in India, the costumes were strictly Oriental. Imogen wore the ordinary "full dress" of a Maratha lady—dark green *sari* with gold edges, golden armlets, and ear-rings. Her face was fair as any English maiden's, and her cheeks bloomed with very conspicuous rouge. Unfortunately, she had not taken the precaution of whitening her arms to match her face, and the contrast was rather marked when she lifted her nut-brown hand, as she frequently had occasion to do, to adjust the cumbersome pearl ornaments which adorned (?) her lily-white nose. A dab of red paint on her forehead, and a large "bob" of black hair projecting

from the back of her head, completed the picture.

The Rani (Queen) was similarly attired in a *sari* of gold tissue. Posthumus wore a red velvet jacket and red turban, and Iachimo was gorgeously arrayed in white and gold turban, and tunic of black velvet with gold embroidery. All the gentlemen carried swords. When the scene was supposed to represent the interior of a house, the performers wore no sandals on their feet.

Speaking of the boys who acted on the Elizabethan stage, Professor Dowden ("Shakespeare Primer," p. 10) says: "A further refinement of art was demanded from these young actors when they were required to represent a girl who has assumed the disguise of male attire, as happens with Jessica and Portia, with Rosalind, with Imogen; it was necessary that they should at once pretend to be, and avoid becoming, that which they actually were." This the boy who took the part of Tara achieved to perfection; his disguise as a boy looked exquisitely girlish, and his manner, timid yet collected, exactly conveyed the impression of Imogen, trembling with womanly fear, and yet nerved by the consciousness that an unguarded gesture meant betrayal of her secret.

Imogen's dress as Fidele consisted of a sleeveless jacket of dark green trimmed with gold braid, above a red, gold embroidered kilt, loose yellow kneec-breeches, and white stockings. Round the head a green scarf, spangled with gold, was wound like a turban, the ends covering the ears and hanging loosely down the shoulders. A slender sword completed the equipment. The remaining characters call for no special remark, except the unusual one that every player, from first to last, knew his part thoroughly, and spoke it faultlessly.

This sketch of a visit to a Hindu play-house may be concluded by mentioning that the social position of the actor in India is at present quite as respectable as it is in England, but formerly, as in England also, his was considered a degraded calling, on account of the frequent immorality of its followers.

DALTONISM.

BY WILLIAM POLE, F.R.S.

THIS is the name given, in many parts of Europe, to a curious defect in the vision of colors, which was first prominently brought into notice by the immortal discoverer of the Atomic Theory, in a description written by him of his own case. English authors use in preference the term "Color-blindness;" asserting that the continental designation is disrespectful to a great man; but there appears reason to believe that the word was used in Dalton's lifetime, and gave no offence to him. Indeed he was more amused than annoyed by his singularity of vision, and was always ready to satisfy the curiosity of others in reference to it. I use the personal name here, as I shall have much to say about the phenomena of Dalton's vision. The subject has lately been attracting much notice; it is a matter of curiosity to the public, and of physiological interest to scientific men; and moreover it has some practical bearings. It is, however, still imperfectly understood, and many points connected with it are open to controversy. I propose, as a humble successor of Dalton in the experience of the defect, to give some account of the most modern state of knowledge in regard thereto.

The perception of color would seem, according to the ideas of those who have not studied the subject, to be as positive and unmistakable as the perception of form. Take, for example, a square red flag: the world in general will consider the *redness* of the flag to be a quality about which there can be as little mistake as its squareness, and they can no more understand how any one can see it as green or yellow, than how he can see it as round or triangular. I have often amused myself by watching the odd impression produced on intelligent shop-assistants who have to do with colors, by a mention of some of the peculiarities of color-blindness. Taking up, say, two ribbons of peculiar shades of red and green, or green and gray, I have asked whether they could conceive it possible that the two appeared to me the same color? Such a question is usually received with a blank stare of amazement

at what is thought to be a foolish joke, and if I attempt explanation, it is seldom they can be brought to believe I am really serious in the assertions made. And it must be admitted that the recorded instances of mistakes can be scarcely credible to those who are new to the subject. A naval officer purchases red breeches to match his blue uniform; a tailor repairs a black article of dress with crimson cloth; a painter colors trees red, the sky pink, and human cheeks blue; a clerk writes a letter half in black and half in red ink without noticing the difference; and so on. Abundance of such instances could be cited which must indeed appear astounding to the normal-eyed, and Goethe only expresses a very common sentiment when he says: "The remarks made by color-blind persons as to objects about them are so perplexing as almost to lead one to doubt one's own sanity." This feeling is a very natural one, for there is no *prima facie* reason to expect that light-rays of a certain wave-length should affect the eyes of two healthy individuals in ways so entirely different as to lead, in one of them, to a total subversion of the established ideas. However, such is the fact, and we have to accept it as a biological phenomenon deserving of careful investigation.

It is necessary to premise that considerable varieties are believed to exist in the intensities of the color-sensations among those who may be correctly described as normal-eyed; persons may differ in their appreciation of colors, and in their judgment upon them, without manifesting any glaring departure from the ordinary views. These cases do not come within the category of true color-blindness, which refers exclusively to a color-vision altogether different from that of mankind in general, and in which many of the ordinary sensations of color are totally wanting. This will clearly be seen when its characteristics come to be explained.

Although the defect has only recently become known, it has probably been co-existent with vision itself. A theory has

been started that the sense of color has been going through a course of gradual development within historical times, and the attempt of Mr. Gladstone to prove, from the writings of Homer, that in his day this sense was generally in an imperfect condition, is fresh in our recollection. It is certainly a singular fact that the expressions for color used by Homer correspond almost identically with those that a color-blind person might be expected to employ, and the antiquity of the affection may be further inferred from its hereditary character. But it would be out of place here to go into abstruse historical speculations; it is certain that the cases which have existed have generally escaped notice. It was only when the progress of modern science had begun to stimulate the observation of natural phenomena that they made themselves known. The first discovery of abnormal color vision appears to have been made, in the middle of the last century, by a humble shoemaker, named Harris, living at Maryport, in Cumberland. Having by accident, when four years old, found in the street a child's stocking, he carried it to a neighboring house to inquire for the owner; he noticed that the people called it a *red* stocking, though he did not understand why they gave it that denomination, as he himself thought it completely described by being called a *stocking*. The circumstance set him a-thinking, and in after-life, being an intelligent man, he determined to make himself acquainted with the nature of light and color, for which purpose he attended a course of lectures on Natural Philosophy. Subsequent observations then led him to the conclusion that his vision was defective. His case came to the knowledge of a gentleman named Huddart, residing in the neighborhood, who, after several interviews with him, wrote an account of it to Dr. Priestley. The facts were thought of sufficient novelty to be laid before the Royal Society, and the letter was read at their meeting on February 13, 1787, and was published in the *Philosophical Transactions* for that year. The actual data of the case are but scanty, for poor Harris had died suddenly before Mr. Huddart wrote his letter. His chief evidence was that he found other persons named colors with

confidence and precision, which he could only guess at with hesitation and frequently with error; he confounded different colors together, and mentioned in particular that he could not distinguish cherries on a tree from the leaves, except by their shape. Meagre as the details are, they are sufficient, by the light of subsequent knowledge, to identify the defect. Harris had, moreover, a brother, whose vision he found also abnormal, and Mr. Huddart mentions, in regard to him, a symptom now well known, that of confounding red or yellow with green.

The case of Mr. Harris excited only a temporary curiosity, and the subject had probably been forgotten, when it was revived by the publication of the memorable paper by Dalton, in 1794; and it is to this paper, and to the investigations subsequently founded on it, that I have here principally to direct attention.

John Dalton was born in 1766; from 1781 to 1793 he was engaged, first as assistant and afterward as principal, in a boarding-school at Kendal, and during this time he employed his leisure in the study of literature and science, a study leading eventually to the brilliant results that have given lustre to his name. In the course of his application to the sciences, that of optics necessarily claimed attention, and he became, he says, pretty well acquainted with the theory of light and colors long before he was aware of any peculiarity in his vision. He had, however, an impression that there was some perplexity in color nomenclature. He always held an opinion, though he did not often care to mention it, that several colors were injudiciously named. He thought, for example, that to use the term red as having any analogy with pink was highly improper, as the two appeared to him to have scarcely any relation; in his apprehension, pink was much more nearly allied to blue.

After the year 1790, he took up the occasional study of botany, which obliged him to attend more to color than before. He still found the same apparent inconsistencies, and often seriously asked questions of his friends which they considered as only put in jest. But he was never convinced of a peculiarity in his vision till the year 1792, when an

accidental observation made on a geranium flower, and a comparison of his impression of its color with those of some of his friends, led to the discovery. Two years afterward he entered on an investigation of the subject, the result of which was the presentation to the Literary and Philosophical Society of Manchester of the paper above mentioned. It was the first scientific communication he ever published; it was read before the Society on 31 October, 1794, and was printed in vol. v. of their Transactions.

The title is "Extraordinary Facts relating to the Vision of Colors, with Observations. By Mr. John Dalton." He appears to have been struck by the singularity of the fact that differences in color-vision could have existed, in his own and other cases, for a long time without becoming known. He says at the outset:

"It will scarcely be supposed that any two objects, which are every day before us, should appear hardly distinguishable to one person, and very different to another, without the circumstance immediately suggesting a difference in their faculties of vision; yet such is the fact, not only with regard to myself, but to many others also."

This fact, however, is amply corroborated by subsequent experience, true cases of the defect being always difficult to find and to establish, though known to exist in large numbers.

Dalton goes on in his paper to give an account of his own vision. He began his observations with the solar spectrum, in which he says he saw only two, or at most three, distinctions, which he called yellow and blue, or yellow, blue, and purple, the part called red appearing to him little more than a shade, or defect of light. He then speaks of the colors of bodies in general, taking them in the spectral order. With regard to the different kinds of red, he describes all crimsons as resembling dirty blue or brown; pink as light or sky blue, a little faded; the color of a florid complexion he compares to diluted black ink, or dusky blue. Scarlet, such as vermillion or a soldier's coat, he describes as giving a totally different impression, which he appears to have recognized as a distinct sensation, giving it accordingly the name of red. In orange and yellow he did not

find that he differed materially from other people. In green, however, anomalies again arose; grass is described as little different from red, a laurel-leaf making a good match with a stick of red sealing-wax. Brown appeared to him green, and very light green did not differ from white. Dark green woollen cloth seemed a muddy red, much darker than grass, and of a very different color. Blue, he thinks, appeared the same to him as to other people; and violet, or purple, was a slight modification of it, which however he could hardly suspect to be a compound of blue and red.

In looking over this account, it is difficult to draw from it any clear and simple explanation of what Dalton's sensations of color really were. There are evidently the most glaring discrepancies with normal vision; but, as he appears to imply that he had really sensations corresponding, not only to yellow and blue, but also to red, orange, green, and violet, the way in which these discrepancies arose appears incomprehensible.

At a later time, however, the difficulty was solved. Sir John Herschel, who had, as is well known, made extensive and profound researches on light and color, became acquainted with Dalton's peculiarity, and determined to investigate it more thoroughly. For this purpose he sent him a large number of skeins of silk, of a great variety of colors, and asked him to match such as appeared to him alike, and generally to express his opinion as to their appearance. Dalton did this with great care, and returned the samples; and I am fortunately able to make public, for the first time, the interesting data thus obtained. About twenty years after Dalton's death, Sir John Herschel, in the course of an investigation into the nature of my own vision, lent me the samples, with Dalton's notes upon them, and asked me to compare the latter with my own impressions. There can be now no objection to the publication of the data, which are contained in the following table.

The first column gives the actual colors of the samples, as carefully named by normal-eyed persons, and the second column contains Dalton's notes upon them. The third column is my own description, which I shall explain hereafter.

Description, by JOHN DALTON, of the appearance to him of a number of samples of colored silk.

Normal description of the Colors.	Dalton's description.	Description by another Color-blind person.
I. Single samples.		
Crimson	Reddish brown	{ Yellow, 18
Brown	Yellowish brown	
Red violet . . .	Red and blue; latter prevails	{ Gray, 16
Gray	Slate blue, brighter than the foregoing sample, but nearly allied to it	
Blue black . . .	Blue black	{ Gray, 13
Black, pure . . .	Brown black	
Yellow orange . .	Yellow, or light orange	{ Blue, 20
Yellow	Yellow	
Yellow, intense	Yellow	{ Black, no color
Lilac	Blue, or lilac	
Pink	Faint blue, tinge of yellow	{ Yellow, 13, but more color
Pink	Blue	
Light blue . . .	Blue, but not so bright a color as the last	{ Yellow, 10
Brown	Brightish orange hue	
Brown	Light red, orangey brown, snuff color	{ Yellow, 10, but more color
Red	Brown	
Brown	Red brown	{ Blue, 5
		{ Gray, 6
		{ Gray, 7
		{ Blue, 5, dirty or dark
		{ Yellow, 16
		{ Yellow, 16 or 17
		{ Yellow, 17, but less color
		{ Yellow, 17 or 18
II. Samples matched together.		
Orange	{ Orange } Alike, and nearly the color of yellow } of gold	{ Yellow, 14
Yellow green . . .		
Yellowish pink (salmon)	{ Alike on first glance, but there is a shade of difference	{ Yellow, 13, with less color
Yellow green . . .		
Green	{ Brown and nearly alike, first rather brighter than second and third	{ Yellow, 16
Red		
Brown	{ Dark blue, nearly alike, first rather more vivid	{ Yellow, 19½
Blue, pure . . .		
Violet	{ Alike, and may be called orange, green, or brown	{ Yellow, 17
Green		
Red orange . . .	{ All blue, with slight shades of difference, the last has a faint tinge of red	{ Blue, 13 or 14, but color more intense
Lilac		
Blue gray . . .	{ All alike, an orangey red color with slight shades of difference	{ Yellow, 17, but less color
Lavender . . .		
Light blue . . .	{ Red brown, very good matches	{ Yellow, 16
Pink		
Red orange . . .	{ These nearly match	{ Yellow, 18
Brown		
Orange brown . .	{ May all be classed among brown	{ Yellow, 18
Light red . . .		
Red	{ All darkish browns, with scarcely a shade of difference	{ Yellow, 18
Brown		
Green	{	{ Yellow, 18
Green		
Brown	{	{ Yellow, 18
Brown		
Several varieties of green . . .	{	{ Yellow, 19 or 20

The list is divided, for convenience of reference, into two parts: in the first, Dalton has simply described, in his own words, the appearance to him of isolated samples; in the second part he

has selected several pairs and small sets of samples, which to his eye *matched*, or nearly matched, each other; and has given a common description for each set. The latter is the most interest-

ing and instructive, as the matching shows the nature of the vision independently of nomenclature, which is not always to be depended on. The phenomena here are unmistakable, as he matches red with green, pink with green, orange with green, green with brown, blue with violet, lilac with gray, blue with pink, and red with orange—mistakes which I suppose must appear to ordinary people of the most astounding character, and indicating a kind of vision which to them must be altogether incomprehensible.

To Sir John Herschel's practised judgment, however, the evidence gained by these tests furnished all the data he wanted; for, by applying to them his great scientific knowledge of the subject of color, he succeeded in solving the problem of Dalton's vision, and in dispelling the confusion in which it appeared to be involved. He communicated his discovery to Dalton himself, in a letter dated May 20, 1833, which was printed in Henry's "Life of Dalton" in 1856. The important part of the letter is as follows:

"Your replies to my optical queries agree, on the whole, with the views I had taken of this singular affection of vision, and seem to throw much light on the matter.

"The question is reduced to one of pure sensation. It seems to me that we have three primary sensations when you have only two. We refer, or can refer in imagination, all colors to three red, yellow, blue.* All other colors we think we perceive to be mixtures of these.

"Now to eyes of your kind it seems to me that all your tints are referable to two, which I shall call A and B, the equilibrium of A and B producing your white, their negation your black, and their mixture in various proportions your compound tints. With regard to what sort of sensations A and B are, of course we can no more tell than you can tell what our α , β , and γ (red, yellow, and blue) are.

"Only this appears to be demonstrated by all the cross-examinations I have ever been able to give any persons so affected with what I think, after all, may be termed 'Dichromatic Vision'; as well as by your answers to my queries: viz., that the same rays which excite in us the sensation γ (blue) excite in you the sensation B; and those rays which excite in us the two distinct sensations, α and β , excite in you only the one sensation A."

I may now take up my own case,

* Sir John afterward modified his views as to the nature of the primary sensations, in accordance with the results of later discoveries.

which forms an appropriate sequel to that of Dalton.* I believe I was about eight or ten years old when the mistaking of a piece of red cloth for a green leaf betrayed the existence of some peculiarity in my ideas of color; and as I grew older, continued errors of a similar nature led my friends to suspect that my eyesight was defective; but I myself could not comprehend this, insisting that I saw colors clearly enough; and only mistook their names. In my subsequent occupations I had much to do with drawings, and I recollect often being obliged to ask, in the process of coloring what color I ought to use; but these difficulties left no permanent impression, and up to a mature age I had no suspicion that my vision was different from that of other people. I frequently made mistakes, and noticed, as Dalton did, many circumstances in regard to colors which temporarily perplexed me; for example, I often wondered why the beautiful rose light of sunset on the Alps, which threw my friends into raptures, seemed all a delusion to me. But I still adhered to my first opinion, that I was only at fault with regard to the names of colors, and not as to the ideas of them, and this opinion was strengthened by observing that the persons who pointed out my mistakes often disputed among themselves as to what certain hues of color ought to be called.

I was nearly thirty years of age (here corresponding again with Dalton) when a glaring blunder, persisted in by me in opposition to the positive evidence of others, led me seriously to suspect that my vision of colors must be defective, and this suspicion once admitted, it was soon confirmed by further observations. I became acquainted with the records of similar cases, and gradually acquired information on the subject, which guided me in the examination of my own symptoms. I cannot now recollect the process of investigation that I followed, but when I became aware of Sir John Herschel's masterly suggestion of dichromatic vision, all difficulty was removed, and the nature of my case became perfectly intelligible. At that time some

* I do not scruple to make extracts from my former writings on the subject, where I think they will be appropriate.

doubts had been expressed, by good authorities, whether the dichromic hypothesis was sufficient to explain all the varied and anomalous symptoms which had been described, and the difficulty had been urged specially in Dalton's case. But it was clear to me that the objection was groundless, and in this belief I wrote a paper for the Royal Society, in which I explained in full detail the nature of my own color sensations, comparing them with the accounts of other cases. I endeavored to show in the first place, that notwithstanding the apparent variety of the symptoms in different persons, the defect was uniform or nearly so, in all; and secondly, that in spite of the apparent complexity of the phenomena, they might all be explained on the very simple hypothesis of dichromic vision. My paper was published in the "Philosophical Transactions" (vol. cxlix. p. 323), and it drew from Sir John Herschel, to whom it was referred, an essay so valuable, that, contrary to the usual rule, this was also published ("Proc. R.S." for 1859). I believe the explanations I gave have been generally accepted, and subsequent experience has amply confirmed them.

The dichromic theory renders it easy to state what the sensations of color-blindness are, although it is not so easy for a normal-eyed person to imagine the appearances and impressions, so utterly strange to him, which they lead to. The color-blind person has only two sensations of color. One of them is excited most strongly by rays which the world call *yellow*; the other by rays which the world call *blue*; and hence all color-blind persons concur in giving these names respectively to their two visible colors. But their powers of vision do not end here; they receive a vast number of sensations differing materially from pure yellow and pure blue, and which give great variety to their impressions of material objects. In the first place, they have great varieties in the intensity, or degree of saturation, of the two colors themselves. In some cases the yellow is intense and full, as in the buttercup or the pigment chrome-yellow, at other times it is weak and pale, as in the primrose. And, similarly, in some cases the blue is very full and in-

tense, as in ultramarine, in others weak and pale, as in the color of the sky.

But further, independently of these two colors, they have a white and a black, as prominent and as distinct to them as to the normal-eyed. Whether the sensations correspond in the two cases is a matter of controversy; but this much is certain—namely, that all objects which convey, to the normal-eyed, *their* sensations of white and black, also convey to the color-blind person *his* sensations of white and black, for which reason he is perfectly justified in using, for such sensations, the same terms. Further, the color-blind person is quite capable of appreciating the immense varieties of shade, caused by the mixture of white and black* in different proportions, forming an almost infinite series of shades of gray. Then, lastly, all these varieties of gray may be combined with the various intensities of either of their two colors, forming different *nuances* of them, and so, still further, vastly increasing the varieties of sensation.

It must be explained that the two colors can never be combined in the same sensation; for in combination they tend to destroy each other, and produce white or gray. Hence, in a mixture of blue and yellow, only that one color is seen which predominates in the mixture.

Combining these facts, we find that, although, strictly speaking, the Daltonian has only two color-impressions, yet his sensations of vision give him:

- I. Pure white.
- II. Pure black.
- III. Infinite varieties of gray.
- IV. Yellow in a great variety of intensities.
- V. Combinations of these with the varieties of gray.
- VI. Blue in a great variety of intensities.
- VII. Combinations of these with the varieties of gray.

And as the various aspects of nature are continually offering changing varieties of these sensations, it is not to be wondered at that color-blind persons

* I adopt here, intentionally, Hering's principle of treating black as an independent sensation.

should find a large amount of satisfaction and pleasure in what they see.

But still, when their vision is compared with that of ordinary people, it is undoubtedly of very limited compass. It follows from the above description that, assuming yellow and blue to be the two colors seen, all other color sensations, such as red, green, orange, violet, and all their combinations, are unknown to the color-blind. And the question at once arises, what impression on them do these colors make? If red and green are not appreciable, are red and green objects invisible to them? By no means. Everything visible to a normal-eyed person, is visible also to the color-blind; but objects which to the normal eye give the sensations of red, green, orange, or violet, give to the color-blind eye a *false* sensation—namely, one of those included in his visible list. A few examples will make this clear. *Red* is a name given to a great variety of hues; the great majority of these verging toward scarlet present to the color-blind their sensation No. V., a combination of yellow and gray—*i.e.*, a dark or shaded yellow, or yellow brown; but if the red be a more pink or crimson hue, it may lose the yellow element, and appear simply gray, No. III., or may even convey the sensation No. VII., a dark or shaded blue. *Orange*, in all variations, corresponds with varieties of No. V. *Green* is a very protean and perplexing color. Yellow greens (which are most predominant in nature) correspond with No. V., neutral greens with No. III., and blue greens with No. VII. *Violet* always simulates No. VII., a dark or shaded blue. *Brown*, of all kinds, finds its representative in No. V.

As a convenient illustration of the above relations, I may now refer to the third column of the Table on page 103, which contains the description of how the samples of silk named by Dalton appeared to me. For this description I used three of the color scales or "gammes," published by M. Chevreul,*

* For a more detailed description of these, see my paper in the "Phil. Trans." They are skilfully and admirably prepared; but I was obliged to point out to Sir John Herschel that they did not completely represent the sensations. Any yellow *nuance* may be denoted by the expression $Y+W+Bk$ (yellow+white+black), each element of which may be variable.

corresponding to yellow, blue, and gray.

The *yellow* scale contains twenty *nuances* formed with the yellow color and numbered 1 to 20 respectively. No. 10 is full intense yellow, as pure as it can be obtained. Nos. 9 to 1 are various "tints" formed by gradually lightening the color, or reducing the intensity and becoming gradually paler, until, in No. 1, it almost disappears in the whiteness of the paper: Nos. 11 to 20 are various "shades" formed by mixing the pure yellow color with varying shades of gray, these becoming darker and darker until the yellow almost disappears in the black of No. 20. All these latter may correctly be called "yellow brown." The *blue* scale is formed in the same way with the color blue. The *gray* scale contains also twenty varieties; No. 1 is white, No. 20 black, and Nos. 2 to 19 are shades of gray passing between them, and gradually darkening as the numbers increase.

Now it will be seen that every color among the samples is matched to my eye by either some *nuance* of yellow, or some *nuance* of blue, or some shade of gray. A certain crimson for example appears to me "yellow 18," *i.e.*, a dark yellow brown. A violet appears gray 1 = 6, *i.e.*, a dark gray. A pink is = gray 6, equally colorless, but a lighter gray. An orange and a yellow green appear alike = yellow 14, a yellow slightly shaded. A red and a darker green appear = yellow 16 and 18 respectively, *i.e.*, the same color, but one a little darker than the other. A certain green and brown appear = yellow 18, or 19, or 20. A blue and a violet appear similar = blue 13 or 14.

A little consideration will show that this explanation easily accounts for the confusing with each other of colors that are entirely distinct to the normal-eyed. We may find a red and a green that both present to the color-blind the same

The numbers 1 to 9 in the gammes give variations of Y and W only; Bk being omitted; Nos. 11 to 20 give variations of W and Bk only, Y being constant. It is easy, therefore, to imagine values of $Y+W+Bk$ which are not included in the scale, and I found I wanted such values to match some of the samples as noted in the column. In some cases, too, the color of the silk was more intense than that on the paper.

nuance of yellow ; or a pink and green that both simulate the same *nuance* of gray, or a green and violet that present the same *nuance* of blue. So that the person confounds the two colors without having the least idea of the proper sensation belonging to either. The colors that he never can confound are yellow and blue, for these are as diametrically opposed to each other in his vision as they are to the normal-eyed.

It will be instructive now to compare my explanation, founded on Sir John Herschel's dichromic theory, with the descriptions given by Dalton, before the idea of this theory was communicated to him. It is difficult, as I have said, to make out from his original paper, how many different color-sensations he then thought he possessed. *Yellow* and *blue* there is no doubt about, but his expressions as to other colors are indefinite and obscure. As to *red*, he appears to convey the idea that he took it to be a distinct sensation, when it was a scarlet variety. His words are, "My idea of red I obtain from vermilion, minium, a soldier's uniform," etc. The pink and crimson varieties he had clearly no idea of. *Orange* he saw like other persons ; but by classing it with yellow he unconsciously throws doubt on the correctness of his assertion. *Green* appeared very little different from red, orange, or brown, which may suffice to prove that, if he had the sensation of either of the latter, he cannot have had the sensation of green. His clear and positive statement that in the spectrum "orange, yellow, and green seem one color," must dispose of the idea of more than one sensation for the three. *Purple* he professes to have seen in the spectrum, but as he adds, it "seemed to him only a slight modification of blue, differing more in degree than in kind," we may consider the independence of this sensation as more than doubtful. *Brown* is mentioned, but this would correspond perfectly with dark yellow. Turning to the later descriptions given to Sir John Herschel, I find he still uses the words red and orange ; green he mentions only once, and violet not at all ; the great mass of his descriptions refer either to blue, yellow, or brown, the latter meaning only dark yellow.

From the two documents combined it may be fairly gathered that Dalton recognized three distinct color-sensations, namely, yellow (including brown), blue, and red, meaning by the latter the scarlet variety. The difference between this and my description is the individuality of scarlet, which he appears to have taken to be a distinct sensation from yellow. This is a very common idea among the color-blind, and as it is one of the chief stumbling-blocks in the way of scientific investigation of the subject, it is necessary to remark on it somewhat fully.

Color-blind persons must be very liable to associate, almost indissolubly, the true normal name of a color with the sensation it conveys to their minds. This tendency is enhanced by the fact that it is not an easy matter always to refer different *nuances*—i.e., different tints or shades of any given color—to the same color-sensation ; so that a modification of *nuance*, if considerable, may easily be supposed to be a different color. This fact is known to the normal-eyed, and the popular nomenclature of colors furnishes illustrations of it, different *nuances* of the same color being called by different names. Pink and crimson, lilac and violet, are examples of this ; but the most pertinent one to the present case is the well-known and very common term *brown*. This merely means either red + black, or orange + black, or yellow + black ; but it always passes popularly as a distinct color, and the best judges (among whom I may quote Sir John Herschel and Professor Clerk Maxwell) have admitted the great difficulty of acknowledging it to be merely a dark shade of red or orange or yellow.

Now, this being the case, it is highly natural that persons who are continually seeing scarlet under the appearance of yellow-brown, should imagine that the latter sensation (which is certainly very distinct from pure yellow) is what corresponds to the term red, and should speak of it accordingly. My own experience is very decided on this point. It was only after long and careful investigation I came to the conclusion that what I took to be red was merely a modification of one of my other sensations ; and if, before I found this out, I

had been interrogated on the subject, I should have declared I saw red as a separate color, just as Dalton did. In the examinations I have made of other patients, I have invariably found the same obstinate clinging to the distinct idea of red, and the same amazement when it was ultimately demonstrated to them that the sensation they called by that name was properly yellow.

A strong argument against the idea that Dalton really saw red is derived from his describing the red end of the spectrum as "little more than a shade or defect of light;" for I may leave any normal-eyed person to judge whether this is consistent with his having had any real sense of the splendid color exhibited there. Sir John Herschel clearly held the opinion that this was a mistake on Dalton's part, and when I read his descriptions by the light of my own experience, I can fully confirm Sir John's judgment. When this mistake is allowed for, it is clear to me that Dalton's impressions of colored objects correspond almost identically with my own, and, with very slight alterations, I could use his own language. The only discrepancies amount to nothing more than slight differences of shade; for example, where he says that a certain red and a certain green match to his eye, I see the latter a little darker than the former, although both are varieties of the same color, yellow. Differences of this kind are known to be common even in normal eyes. I have, therefore, every reason to believe that Dalton's case corresponds not only with my own, but with all others I have had the opportunity of examining, and that this uniform defect is of the kind correctly named by Sir John Herschel "dichromatic vision."

Something may now be said as to the statistics of the disorder. It might at first be supposed that so strange an anomaly could hardly exist to a large extent without making itself observed. Dalton thought so at first, but when he came to inquire among his friends and acquaintances, he found many persons similarly situated. He devotes a separate division of his paper to "An Account of others whose Vision has been found similar to Mine." His own broth-

er was one of these. He also investigated the case of Harris, of Maryport, previously mentioned, and learned there were no less than four of the family with defective vision. He soon found nearly twenty persons so situated, and he took the trouble to satisfy himself as far as possible that the nature of the peculiarity of vision corresponded, in all cases, with his own. Since that time extensive investigations have been made by various inquirers, following a course of systematic testing, and the result is curious. In males, the average is about *four per cent.*, so that one man out of every twenty-five we meet may be fairly guessed to be deficient of any true idea respecting the colors of objects he sees around him. With females the case is very different, the defect in that sex being so rare that women may almost be pronounced free from the liability to it altogether, an interposition of Providence for which they ought to be very grateful. Isolated cases do, however, exist among them. I have one now under examination, of a lady of great intelligence and high culture, and I am pretty sure it will turn out to be as positive and well defined a case of dichromatic vision as my own. It may be added that there is every reason to believe that the defect is hereditary, and this proves its great antiquity.

The physiological nature of color-blindness is a matter of great interest to scientific men. In investigating this it is very necessary to avoid confounding the true Daltonian defect with any of the milder forms of imperfect vision already referred to. Minor degrees of misapprehension of color may be due in some cases to want of education in distinguishing complicated hues; or if really physiological defects, they are only so in the *degree* of the sensations, and there is some reason to think that the latter like the former are curable. But the true defect involves a totally different *kind* of visual perception, which is a much more serious matter. It is altogether a delusion to suppose (as many writers in the newspapers lately appear to have done) that this is merely a functional derangement, which has come on at a particular time, or under any particular circumstances, and which may

be corrected by some mode of cure. All sufferers from it agree in testifying that the actual condition of their vision is the only one they have ever known, and is perfectly natural to them; and all investigators agree in the inference that the peculiarity is due to some natural and congenital defect of organic structure or organic action, altogether incapable of cure, or even of amelioration by any known means.

What the exact anatomical or physiological nature of this defect may be, is somewhat obscure. Dalton could not avoid the temptation to exercise his great reasoning power in endeavoring to find this out, and he devoted a third division of his paper to "Observations tending to point out the Cause of our Anomalous Vision." It is a pretty specimen of ingenious reasoning, and he propounds the theory "that one of the humors of my eyes, and of the eyes of my fellows, is a *colored* medium, probably some modification of blue. I suppose it must be the vitreous humor, otherwise I apprehend it might be discovered by inspection, which has not been done." After Dalton's death, Mr. Ransome, his medical attendant, made, with the consent of the executors, an examination of his eyes, and sacrificed one of them to the determination of the color of the three humors, which were found, contrary to Dalton's hypothesis, to be in a perfectly normal condition, the vitreous humor and its envelope being perfectly colorless. It was also discovered, by actual testing of the untouched eye, that the rays from objects of different colors passed through it without any appreciable alteration, the contrast being as great as ever. Mr. Ransome and Dr. Brewster (to whom he explained the circumstances at the time) agreed "that the imperfection in vision arose from some deficient sensorial or perceptive power, rather than from any peculiarity in the eye itself."

The explanations given by modern physiologists are all bound up more or less with the theories of light and color-perception generally; and as these theories, and the explanations founded on them are at present in a very unsettled state, and involve many disputed points, all I will attempt to do here is to give a very brief and general notice of them.

According to the most generally received theory, that of Young, the normal visual organs are capable of being impressed with *three color-sensations*, all color perception being caused by the combination of these in varying proportions. The exact nature of the three fundamental sensations is a matter of dispute, but they are generally believed to correspond with some varieties of red, green, and blue or violet. It is assumed that in color-blind people one of these sensations is wanting, leaving the other two in action, and thus causing dichromatic vision. The wanting sensation is supposed to be most commonly either the red or the green; in the former case, which is called red-blindness, the patient is impressible by only green and violet; in the latter, green-blindness, he is impressible by only red and violet. The reason why the color-blind insist on calling their less refrangible color yellow, and not red or green, is said to be that the visible sensation, in the absence of a certain alteration normally caused by the missing one, gives its maximum intensity in a different wave-length from that which affects the normal vision; this wave-length nearly corresponding to the place of yellow in the spectrum. Hence, although the patient receives either a red or a green sensation, yet as he finds it given most powerfully by objects which the normal-eyed call yellow, he calls it yellow also. The same explanation is applied to the more refrangible sensation, which, if it is really violet, may thus correspond with blue and be accordingly called so.

A more modern theory, that of Hering,* assumes *four* fundamental color-sensations—namely, blue, yellow, red and green. These, however, are said to result from only two *sources* of sensation, each of which is capable of a double, or reversible mode of excitement, producing the sensations of two colors complementary to each other. Thus one of the sources of sensation corresponds to blue and yellow, the blue rays exciting it in one direction, and the yellow rays in the other. The other source corresponds to red and green in like manner. The explanation of color-blindness on this theory is very sim-

* See *Nature*, October, 1879.

ple ; normal-eyed persons possess both sources of sensation, color-blind persons possess only one—namely, that corresponding to blue and yellow, leaving them blind to both red and green, and all their compounds, which is of course dichromatic vision.

These conflicting theories are at present under discussion, and it is probable that one of the best means of settling the disputed points may be by the study, more thoroughly and carefully than heretofore, of the visual phenomena manifested by the color-blind.

There are some practical considerations in regard to color-blindness which have been much commented on of late ; indeed the most modern literature of the subject has been mainly devoted to them. They refer to the competency of color-blind persons to fill certain social positions where the discrimination of colors is of importance. It is evident that persons having this defect must be at a disadvantage not only in the pictorial arts, but in many scientific, industrial, and commercial occupations. Yet it is remarkable how well they have often contrived to get on, in spite of what normal-eyed judges would predict of their incapacity. Chemists, for example, would say it was impossible for a color-blind person to meddle with their science, in which color is one of the most important elements of observation ; and yet Dalton somehow made a tolerable name in chemistry. Draughtsmen would ridicule the pretensions of a Daltonian to make, or use, or judge of colored drawings, and yet I contrived to do all this for years with tolerable success without even knowing that there were any serious difficulties in my way. And if one could get at the facts, I am certain we should find abundance of instances in all sorts of occupations where persons similarly affected, but in happy ignorance of their failing, succeed in blundering through their duties without any serious break-down.

Such cases as these may be fairly left to the operation of the ordinary laws of business affairs ; but the writers on the subject have chiefly busied themselves with one that bears a different character, inasmuch as it directly involves the public safety ; this is the possible employ-

ment of color-blind persons on railways and in marine service, where colored signals are employed. Most people know that red and green lamps are used at railway junctions, the former to stop a train, the latter to allow it to pass on ; and at sea the use of red and green lights on the two sides of a vessel, indicates to other ships the way she is going, in order to avoid collisions. Now, as none of the most common symptoms of color-blindness is the confounding, under certain circumstances, of red with green, it is taken for granted that a color-blind engine-driver or helmsman must be unable to distinguish between the contradictory signals, and frightful pictures are drawn of the danger that the public are constantly incurring. But what says the inexorable logic of facts ? In this country we have not only had a tolerable experience of the working of railways for half a century but we have gathered a mass of information about railway accidents which is unknown elsewhere. Every casualty that occurs in the three kingdoms is carefully inquired into by a Government Board, and a report is published as to its causes : and yet, so far as I know, never, in a single instance, since railways have been in use, has an accident been traced to the mistaking of a red for a green night signal. And when we consider that, according to the statistics, about one in every twenty-five engine-drivers must have been color-blind, it follows that, if the notions of the alarmists had been true, numbers of collisions would have occurred every day—in fact, that the traffic of the country could not have gone on. The truth is, the agitation has arisen from the difficulty the normal-eyed investigators have in understanding exactly what we, the color-blind, really see. We could tell them that although the red and green lights do not give us the true red and green sensations, yet still they are strongly contrasted to us, and we are in no danger of mistaking one for the other. The only accident I ever heard of in regard to the color of a signal was a curious one ; a driver when approaching a signal-post, had been looking into a very bright fire, which so affected his vision that for the moment he lost the perception of red ; he mistook the red

light, not for green, but for *white*, and going at full speed through the wrong points dashed into a train in a siding. On the whole, then, I think the alarm on this subject is unnecessarily magnified; but at the same time I do not deny a possibility of danger under certain circumstances, and I would by no means discourage reasonable precautions

in the selection of men. The agitation has at least had some good result, for not only has it induced a wide discussion of the phenomena of the defect, but it has given rise to many ingenious and systematic means of discovering its existence, which, previously, was a difficult matter.—*Contemporary Review*.

THE REGICIDES OF THIS CENTURY.

KINGS and emperors have been so many since the world began to form itself into states, and they have naturally had so many enemies, that one is inclined to marvel that so few of them should have perished by assassination. There have always been occasions on which a determined man could approach the person of the best guarded monarch; and so the fact that sovereigns are generally well protected has little to do with their comparative immunity. But it is noticeable that attempts against rulers are usually made when society is in a perturbed state, and the popular respect for supreme authority has got weakened. Thus feeble-handed or well-meaning potentates who sought the good of their subjects have been more exposed to criminal assaults than downright tyrants; and it is very seldom that the murderer of one of them has in any way benefited the popular cause. It may be suspected that most regicides have been madmen; on no other supposition can one explain the habitual short-sightedness of their calculations. Louis Philippe, of France, had his life attempted nineteen times. He was a good-natured, constitutional king, who had no power to harm a soul even had he wished to do so, which he did not; and he had a large family of grown-up sons, who were all popular, so that if he had been killed, the sceptre would have passed into younger and stronger hands than his at once. There was no sense in endeavoring to take the life of such a man. His assailants must unquestionably have been persons of weak or crooked intellect; and one may say the same of Hoedel, Nobiling, and Passanante, who within the last two years lifted up their hands against the Emperor of Germany and the King of

Italy. The death of William I. could have done the Socialists no sort of good, and that of Humbert I. would not have advanced the cause either of Republicanism or of Clericalism in Italy. The case is somewhat different with regard to Alexander II. of Russia and Alphonso of Spain, who stand in much the same position as Napoleon III. did in France. The head of the Bonaparte dynasty was looked upon as the incarnation of a political system. If he had been killed by the Orsini bombs in 1858, the empire would have collapsed with him; and so, if Alphonso were to fall before having an heir of age to succeed him, his kingdom would become a prey to all the adventurers who have something to expect from civil war. As to the czar, the Nihilists are probably wrong in supposing that there would be any vital change in the form of government if the crown were to change hands; but there is room for doubt on the subject, so, if they be mad, there is at least a method in their criminal folly.

The first year of the nineteenth century was marked by an attempt on the life of General Bonaparte, who was then First Consul. Two Italians, named Arena and Gerachi, sought to kill him on December 24, 1800, with an infernal machine as he was returning to Paris from St. Cloud. This is the first time we hear of infernal machines. Arena and his comrade had constructed theirs by placing a box charged with explosive materials on either side of the road, and connecting the two boxes by means of a wire, which, when touched by the horses of the First Consul's carriage, was to pull the triggers of two pistols loaded with tinder, and thereby set fire to the explosive stuff. The blow-up

occurred as had been expected, and one of the postilions was wounded; but Bonaparte himself escaped without a scratch. His life was twice tried after that, in February, 1804, by George Cadoudal and some other Bretons, who threw some grenades under his carriage as he was leaving the Cour du Carrousel in the Tuileries; and on October 23, 1809, by a student named Staaps, who endeavored to stab him in the garden of the Emperor of Austria's palace at Schœnbrunn. There were many other conspiracies against the emperor's days, but they were all discovered by the police, and their authors sent to the scaffold or the galleys. Napoleon I. was too much a fatalist to care for assassins, and it is said that even after the attempt of Cadoudal, when he had a very narrow escape, he remained quite unmoved, remarking that he had his appointed work to do, and should not fall till he had done. Considering that Napoleon was an autocrat of the hardest type, and that as a conqueror he had humiliated almost every nation on the Continent, it is not surprising that he should have had a large number of desperate foes; but it is noticeable that the chief attempts on his life were made at a time when his throne was not yet securely established. So long as he was regarded as the master of the world, the awe which he inspired was universal, and murderers seem to have been afraid to strike him.

It would be difficult to explain why assassins almost always fail in their attacks upon rulers. If, as Scott says, "a sinful heart makes feeble hand," we have a reason; but it is not the less remarkable that infernal machines, pistols aimed almost point-blank, and poignards wielded by the hands of men who do not seem to be poltroons, should so generally miss their marks. The conspirators who assassinated the Emperor Paul of Russia on March 11, 1801, went to work in a way that precluded the possibility of failure. They surprised him in his bed-room at night and strangled him with a towel. The high rank of the conspirators, the number of them, and the determination with which they were animated, gave the unhappy czar no chance. A sentinel who endeavored to raise the alarm was overcome and dis-

armed; another who was on guard out side the czar's room was killed; a page who stood in the way was hurled over some balusters. The murderers acted like men who felt that they were bound to succeed or to die; and they were nerved by the consciousness that the czar's heir—the future Alexander I.—was at heart with them, so that if they succeeded they would not be punished. Besides, Paul II. was a monomaniac who had no friends. The people despised and hated him; the army had no respect for him; and, to make matters worse, the czar's overt admiration for France and General Bonaparte was regarded as politically detrimental to the interests of Russia by the boyards, who favored the English alliance. The Russians themselves pretend that the English ambassador had knowledge of the plot against Paul's life, and tacitly abetted it. However this may be, the assassination of the unfortunate czar cannot be looked upon as an ordinary case of regicide; it was rather a political execution decreed by a *Vehmgericht*, which numbered scores of the leading nobles of the empire.

From 1809, when Napoleon was assaulted at Schœnbrunn, until 1832, when the life of the Emperor Ferdinand of Austria was attempted at Baden, the ruling potentates of this earth lived unmolested. In the mean time, however, the Duke de Berry, eldest son of the Count d'Artois, heir-apparent to the French throne, had been assassinated on the steps of the opera-house by the Republican fanatic Louvel (who plunged a knife between his shoulders), and this murder is believed by some historians to have had a fatal effect in shaking the Bourbon dynasty. It is doubtful, however, whether, had the prince lived until 1830, he could have helped to avert the revolution which took place in that year. He was a kindly disposed prince, but frivolous and headstrong, and it is not likely that he would have opposed the issuing of those dictatorial "Ordonnances" against the liberty of the press which cost Charles X. his throne, and led to the accession of the Duke of Orleans, under the name of Louis Philippe.

Louis Philippe, as already said, had his life tried nineteen times. The most

famous of the attempts against him was that made by the Corsican Fieschi, in 1835, by means of an infernal machine composed of a number of gun-barrels. This dastardly outrage, committed in broad daylight, while the king was holding a review, resulted in the death of Marshal Mortier and of twelve other persons. Fieschi is suspected to have been the mere hireling instrument of a Republican faction; but he went stoically to the guillotine without having betrayed any of his accomplices. A private soldier named Alibaud, one Darmes, a mechanic, Meunier, a merchant's clerk, Lecomte, a gamekeeper, and Henry, a crackbrained manufacturer, were among the other scoundrels who at different times essayed to kill the most peaceable monarch France ever had. Louis Philippe had grown so accustomed to be shot at, that he used to return to the Tuileries after each new attempt in a perfectly composed frame of mind and ready for his evening's work. The anxiety of his family and his ministers was, however, of course very great, and toward the close of his reign he never showed himself in public without a formidable escort of soldiers. By way of taking exercise, he was reduced to walking in the parks of his two favorite châteaux at Neuilly, near Paris, and Eu, in the neighborhood of Dieppe. Nobody could get near him at either of these two places, and it is not surprising that he spent more of his time in them than in any of the other royal residences.

During Louis Philippe's reign, and the four following years, attempts were made upon the life of Queen Victoria by Oxford in 1840, and by a workman named Francis in 1842; upon the King of Prussia, Frederick William IV., in 1844, and again in 1850; upon the present Emperor of Germany, then military commander of Coblenz, in 1849; and upon Isabella, Queen of Spain, in 1852. None of these attempts succeeded. Oxford, who shot at Queen Victoria while she was passing on Constitution Hill, was clearly a lunatic, and was consigned to Bedlam as such. He remained there about twenty-five years, and while in confinement showed himself invariably rational, working industriously as a carpenter, and expressing his deep remorse

whenever he was questioned about what he termed his "wicked piece of foolery." Oxford is alive still, but he is residing out of England. Not so Francis, the carpenter, who assaulted the queen in 1842, and made a large wale on her face. This man died shortly after he had been lodged in St. Luke's Bethlehem. He was unquestionably mad. Nevertheless, after his offence, Parliament passed a bill enacting that flogging should be inflicted in future upon any one seeking to inflict bodily harm upon the queen, or to threaten her. It was by virtue of this Act that the young fool O'Connor, who leveled a pistol at the queen in 1869, was sentenced to be imprisoned for a year, and to receive twenty strokes with a birch. The queen kindly remitted the whole punishment, and caused the boy to be supplied with funds that he might emigrate to Australia. But within less than a year after he had been shipped off to Southampton, O'Connor returned to England, and was found prowling within the precincts of Buckingham Palace at night, evidently with evil intent. This time he was certified to be out of his mind, and was sent to an asylum, where he remained under treatment four years. He is believed now to be in New Zealand.

The persons of queens ought, by reason of their sex, to be more sacred than those of kings; yet Isabella of Spain, like her royal sister of England, had her life attempted twice. In 1852, while she was attending mass in the Cathedral of Atrocha, at Madrid, a man called Martin Marinos endeavored to stab her, and would have succeeded, but for the interposition of an officer, who, rushing forward, received the blow on his arm. So violently had the blow been dealt, that the stiletto completely transfixed the officer's biceps muscles, and could with difficulty be extracted. The queen, when she saw the blood flow, swooned; but the officer, with true Castilian gallantry, borrowed a cloak to hide his wound, and, though faint with pain, claimed the honor of leading her majesty back to her carriage. Isabella, before parting from him, made him a knight of her order of "Isabella the Catholic," and appointed him to be one of her aides-de-camp. Four years after this, in May, 1856, the Queen of Spain was

shot at while driving through the streets of Madrid. A peculiarity about this attempt was that the bullet intended for the queen passed clean through the two windows of her carriage, shattered the plate-glass front of an engraver's shop, and pierced a portrait of her majesty that was displayed for sale in the window. This portrait was purchased by the queen for £40, and, magnificently framed in gold, was presented by her as a thank-offering to the chapel of the Convent of Maria de las Misericordias.

From Spain we may return to France, where Napoleon III. was reigning. It was in 1852 that this sovereign's life was tried for the first time; and another attempt was made upon it by a Radical shoemaker in 1853. This year—1853—was prolific in regicidal outrages, for a traitor called Libenyi tried in February to murder the Emperor Francis Joseph at Vienna, while in March a soldier sought to dispose of the reigning Duke of Parma, Charles III. Three years passed now without any more crimes of this sort; but in 1856 Napoleon III. was twice put in peril of his life, both his aggressors (Pianori and Bellamare) being Italians. It is said that after the attempt of Bellamare the emperor took to wearing a shirt of mail under his linen. It was not, however, until after the fearful enterprise of Orsini, on January 14, 1858, that he got to be so seriously unnerved as to live in constant dread of assassination. Count Felice Orsini was not a mere vulgar fanatic, but a gentleman by birth, education, and fortune. An ardent patriot, and a partisan of the unification of Italy, his grudge against Napoleon III. was that the latter, when a political refugee in Italy, had joined a Freemasonic lodge, and sworn certain oaths which, by and by, as emperor, he had neglected to fulfil. Principally as regards Rome, Orsini was furious at seeing the temporal power of the pope maintained by a French garrison of 18,000 men; and two years before attempting Napoleon's life he wrote anonymously to warn him that the Carbonaro lodges had decreed his death, and that the sentence would infallibly be carried out if the imperial policy toward Italy were not altered. Had Count Orsini's accomplices—Pierri, Rudio, and Gomez—been men of his

mettle and determination, the attempt against Napoleon on the night of January 14, 1858, must have been crowned with success; but they were poor, ignorant cravens, who did their work for pay, not from conviction, and their hearts failed them at the critical moment. Each of them had been provided with two explosible shells, which were to be thrown under the emperor's carriage as it drove up to the opera. Orsini threw his two shells, and Pierri one, but the other two men ran off in a fright when they heard the first explosion. The damage done by the shells was ghastly. Five people were killed outright, and nine wounded; all the soldiers of the mounted escort were bruised or scratched; the emperor's coachman fell off his box stunned on to the carcass of one of his horses, which lay dead; and one of the footmen was blown twenty yards off, with his skull battered in. Meanwhile hundreds of panes of glass in the street had been smashed, all the gas-lamps were extinguished, and in the darkness there resounded an appalling tumult of plunging horses and shrieking women. Lanterns and torches had to be brought out of the opera, and then it was seen that the imperial coach was a complete wreck. How the emperor and empress managed to escape, with not so much as a singed hair or a cut finger, is nothing short of marvellous. Apparently not daunted in the least by what had happened, the empress said to the emperor, "We must go into the house to show them we are not afraid," and a few minutes later the entry of the imperial couple into their box became the signal for a magnificent ovation, all the spectators rising *en masse* and cheering to the echo.

Nevertheless, from this time Napoleon III. was an altered man. In the following year he undertook the war against Austria, for the liberation of Italy, and ever afterward he went in fear of his life. Not a coward's fear, for he was a thoroughly brave man, but a fear which the French call *crainte raisonnée*. He expected to be murdered, and took the minutest precautions to insure that the government should be carried on by a strong regency in case of his demise. He never went out without leaving directions as to where the latest copy of his

will was to be found; and at times, when he was in low spirits, he used to say that he had dreamed he should be assassinated within such and such a time. During the remainder of his reign, all Italians visiting France were required to exhibit passports; and if not persons of undoubted respectability, were closely watched till an excuse was found for expelling them from the country. In despite of these precautions, Napoleon's life was again attempted, by an Italian, in 1863; while in 1866 three other intriguers of Orsini's interesting country—Greco, Trabuco, and Imperatore—entered into a murderous plot against his life, which was happily nipped in the bud by the police. There is said to have been another and more mysterious attempt against the emperor, of which the public heard nothing, except by rumor. A gamekeeper, of the forest of Compiègne, shot at his majesty while the latter was engaged in a pleasant *battue*; but one of the equerries in attendance on Napoleon discharged both the barrels of his breech-loader into the head of the murderer, and killed him on the spot. So the story runs; but whether it be a true one or not, will probably never be known till some of the secret memoirs of the imperial era come to light.

During Napoleon III.'s reign there were attempts against King William of Prussia, in 1861, and against the Viceroy of Egypt, in 1869; while in 1865 Abraham Lincoln, President of the United States, was murdered in the theatre of Washington, as he was attending a performance of *Our American Cousin*. This calamitous event was followed by what some consider as the judicial murder of the Emperor Maximilian, at Queretaro, in 1867, and by the assassination of Prince Michael of Servia, at Belgrade, in 1868. In the mean time the Emperor Alexander II. of Russia had been twice exposed to criminal enterprises—once in St. Petersburg, when he was shot at by a man named Korakasow, and the second time in the Bois de Boulogne of Paris, when he narrowly missed extinction at the hands of Berezowski, a young Polish refugee. But these attempts against the czar are so closely interwoven with events of the

present day that they must be mentioned in fuller detail.

It was to a peasant named Kommissarow that the czar was believed to have owed his safety when Korakasow fired at him in 1866, but some say that Kommissarow fainted with emotion on hearing the shot, and that it was a woman who first raised the cry that he had stepped forward and arrested the assassin's arm. Anyhow the lucky peasant was loaded with honors and presents. The czar gave him the title of baron, a palace, an income; and would doubtless have kept him in lasting favor had not this alleged preserver turned out to be a brute addicted to drink, so that he had to be disposed of at length by being sent as lieutenant into a regiment campaigning in the Caucasus, where he is said to have died soon afterward. As for Korakasow, he was sent to Siberia, and may be working in the mines there to this day for aught that is known to the contrary. The czar was rather surprised than upset by this man's attempt on his life, for Nihilism had not yet begun to ferment in the land, and Korakasow was looked upon as an isolated madman; but in the following year Berezowski's attempt gave Alexander II. infinite pain. The Emperors of Russia and France were returning together from a review in the Bois de Boulogne when Berezowski—a lad of twenty—stepped forward and discharged both barrels of a pistol at once at their barouche. The pistol exploded, and wounded the assassin, but it was not this that saved the life of the czar. M. Rambaud, an equerry who was riding beside the carriage, happened to see the pistol aimed, and spurred his horse forward just in time to intercept the bullets; indeed, the blood of the wounded charger was sprinkled over the czarewitch, and made Napoleon III. imagine for a moment that this young prince had been wounded.

It turned out, when Berezowski was put upon his trial, that his father and a brother had been exiled to Siberia for participation in the Polish rebellion of 1863, and this fact saved him from the guillotine. The jury at the Seine assizes tempered their verdict of "guilty" with the finding of "extenuating circum-

stances," and the prisoner was sentenced to be transported to New Caledonia. Whether he is there now is not exactly known to the public, for one of the first acts of the Government of National Defence in 1870 was to grant him a pardon ; and though this act of grace was subsequently cancelled by M. Thiers, some say that Berezowski had already been liberated, when the order for detaining him arrived. Others say that Berezowski escaped from Noumea in 1871 ; others again allege that he died in 1872. Altogether a mystery hangs over the fate of this young man, whom the French Government profess to be still holding in durance.

Berezowski's crime did his fellow-countrymen, the Poles, an immense deal of mischief. The iron grasp of their Russian rulers was tightened upon them from that time, and various merciful concessions which had been wrung from the czar's pity for their nation were withdrawn. Probably it will transpire in time that the recent Nihilist outrages have had an equally pernicious effect in checking the Liberal progress of Russian institutions. The attempt of Solowiev in 1879, the explosion on the Moscow railway, and the attempted blowing up of the Winter Palace in the present year, are crimes of a sort which either drive an autocrat mad with panic or else harden him. In any case they cannot be favorable to the cause of the misguided factions who are responsible for them. Russia can, no more than any other state, civilize itself by murder.

A passing allusion has been made to the attempts of Nobiling and Hoedel on the Emperor of Germany ; to that of Passanante on King Humbert ; and to those of Moncasi and Ottero on the King of Spain. It will be remembered that in 1872 a cowardly endeavor was made to blow up the carriage that con-

tained King Alphonso's predecessor, King Amadeo, and the latter's gentle queen, who was at the time in very weak health, and who died soon afterward. Amadeo abdicated shortly after this occurrence, and left the unfortunate kingdom, which he had so honestly essayed to govern, to be ruled by the present sovereign, who, at the time of his accession, was a boy of eighteen. Alphonso, though young, has exhibited all the nerve and temper of middle age in facing the perils by which he is—and must continue for a long time to be—surrounded. He is quite conscious of standing in a most critical position ; but he has faith in his star, and it must be hoped, for the credit of humanity, that he will be allowed to finish in peace and honor, and in the full ripeness of age, a reign which he began well, and which he is carrying on with courage.

One must add two Presidents of South American Republics to the list of rulers who have recently fallen victims to political zealotry. Don Gabriel Garcia Morenos, President of Ecuador, was assassinated in 1875 ; and Don B. Gill, President of Paraguay, perished in 1877 under similar circumstances. Of the attempts at assassination perpetrated in the Spanish Republics of America—in Mexico, Chili, Peru, and elsewhere—it would be invidious to speak. They are too numerous. The newspapers bring us accounts of new ones by almost every mail ; and one can only marvel that any sensible man should be found to accept the presidential functions in these extraordinary countries, where a ruler seems to be looked upon as a living target at whom aspirant politicians are privileged to shoot without running the risk of being disgraced as murderers if they succeed in hitting him.—*Cornhill Magazine.*

AN ANECDOTE OF INSTINCT.

A CERTAIN Archbishop of Canterbury was accustomed, when young men came to him for ordination, to ask them to preach a sermon before him and his chaplain—not the whole of one, but a part, just to show that they had some notion of their future calling. Gener-

ally speaking, this was a very embarrassing position for the candidate, but on one occasion the embarrassment is said to have been the other way. The youth in the pulpit, addressing the primate and his chaplain, thus commenced his sermon : "The congregation before me

divides itself into two parts, the Evil and the Good." "That will do," said the archbishop hurriedly, who did not wish to hear further particulars. Now, as I myself am not a divine, I dare not use such harsh definitions. The two parts into which the world seems naturally to divide itself to *my* mind are these: (1) The people who don't believe in the anecdotes of instinct, and (2) the people who do. That this latter class is still so numerous is greatly to the credit of human nature, and proves that simplicity is by no means expelled from the heart of man by civilization, roguery, and other causes. These excellent persons occupy very much the same position in canine and feline affairs as the orthodox do with respect to theology; and their opponents may very well complete the parallel and be likened to the modern sceptics.

For example, in old times it used to be an article of faith with us all that dogs preserved their masters from drowning. In youth we read a hundred delightful stories describing the anatomical intelligence with which Carlo and Neptune would seize their young masters "Tom" and "Billy" by the nape of the neck, or other comparatively tough portions of their bodies, and bear them out of deep water into shallow. A hundred illustrations—very highly colored—heightened the attractions of these incidents, and finally Sir Edwin Landseer himself crowned the edifice of credulity by his famous picture of "A Member of the Royal Humane Society"—a Newfoundland dog with a dripping child in his mouth. Now, the canine sceptics—my class No. 1—not only deny these facts, but (like the modern infidels, who, not content with ignoring Providence, ascribe to it malignity) assert that all that dogs have ever done in the water way is to help drown their masters.

They allow that they may have good intentions, but that the effect of their demonstrations of affection has been to beat the struggling swimmer down with their fore-paws, and when they have got him under water to keep him there. This is, of course, an extreme example of the antagonism of creed; but, on the other hand, it must be owned that class No. 2 do make demands on human

credulity in the interests of their canine clients which are somewhat exacting. What is more common, for instance, than to hear one's neighbor at a dinner-table describe how a friend's dog, having been taken by train—let us say from London to York—and disposed of to a new master, has found his way back by road to his old home? One may read such stories in print, of course, by the dozen; and when we do so we can close the volume, and our left eye, without offence to the author. There is no necessity imposed upon us to pretend to believe a word of it. But the personal assertion of our neighbor—a lady, perhaps, or at all events a friend of our host—is more difficult to deal with; politeness or the laws of hospitality require a certain profession of faith. We say, "Dear me, how extraordinary!" but we *think*, "That's a whopper, my good sir, or madam, and I hope it's your first." The story, in fact, is incredible.

A number of my readers will here remark to themselves, "But I knew a dog who did exactly the same thing," though the distance, perhaps, may not have been so great. Forgive me, my dear friends, but you do *not* know that dog; you only know somebody who has told you that he knows it. The evidence of this class of anecdotes of instinct is precisely the same as that for the existence of ghosts; it is always second-hand. If the thing was really believed—if we felt, that is, as sure that the dog came back by road as that he went by railway—the wonder of it would overwhelm us. It would be exactly as if a miracle had been enacted before our very eyes, in which case we should surely be always talking and thinking about it. For is it less than a miracle that a dog conveyed in a box for hundreds of miles should, on being let out, find his way back again by what is not even the same road, but practically a totally new one? The advocates of credulity remark on this (I must say rather feebly), "But consider the powers of smell possessed by these sagacious animals!" To which one is tempted to rejoin, "And what a very strong smell must have attached to the dog's master." No; the smell theory will certainly not account for such a circumstance. And I feel

very sure of this, that if men of science credited the fact (which they don't), they would never rest till they discovered the theory that did account for it. Can it be supposed that a wise man would spend his time in discovering a star of the twelfth magnitude, ten billions of miles away from him, when such a problem as this god's sagacity lay under his nose—when, that is, a possibility existed of his discovering the miraculous sense by which the creature found its way from one point to another, hundreds of miles apart, without a voice to ask a question, or a shilling to pay for a lift in a dog-cart? Is it the way of men of science to be satisfied with vague generalities—such as "recognition of locality," "instinct for place and person," etc.—to account for such a marvel? Again, if such a secret was discovered, how do we know that it might not be utilized for human beings? and are men of science so careless of what may be of such vast benefit to humanity—or, at all events, to themselves—as to neglect such an investigation as they have done? No; they give no attention to the matter because they discredit it.

For many years a similar superstition was believed in as regarded pigeons; but it is now admitted that pigeons only take the road they know. From a great height in the air, and with their acute powers of vision, they can see their way for many miles, and the method adopted in their training is to take them first, ten miles, then twenty, then thirty, and so on, till they know their way perhaps from London to Paris. But beyond that distance they can rarely be got to go, and only a few out of many accomplish even that. Yet a dog, forsooth, who travels on the ground, is held to be endowed with infinitely greater powers. The proper name for such anecdotes of instinct is, in short, stories.

My views upon this subject are well known, and on a certain wintry day I was called upon by an old friend in the army, one Captain Brook, invalided from the Cape, upon a matter in connection with them. "I know," he says, "you have your doubts about the powers of instinct; and if you choose I can now give you an opportunity of testing them."

The circumstances were as follows: He had gone out with his regiment to Ceylon with a fox-terrier, and, as often happens, the little creature had suffered from the heat of the climate; its hair had come off in great patches, and it had gone stone-blind. When Captain Brook was ordered to the Cape (some ten months ago) he had left the dog with a friend in Ceylon; and after a little while, falling ill himself, had returned to England. His friend had written to him: "Poor Vic. is worse than ever; she will certainly die if she remains here; shall I put her out of her misery, or send her home by Peninsular and Oriental steamer? It will cost ten pounds." He had written back, "Send her," and had been advised on the day he called upon me that the ship which was to bring her had arrived in the Victoria Docks. "Do you believe," he said, "that a dog stone-blind will recognize its master after so long an absence?"

"He will, perhaps, recognize your voice," I said.

"But if I don't speak to him?"

"Then," said I, "I don't think he will."

"Will you come and see for yourself?"

This I agreed to do, and I did so.

The way to the Victoria Docks is peculiar; after driving through the heart of the city, you take the most objectionable railway journey, in the dirtiest and greasiest carriages conceivable, to its East-end. On both sides there are miles of miserable streets, without one glimpse of anything picturesque or pleasant, till suddenly you find yourself in a forest of masts.

The effect is more extraordinary than that of the woods of Birnam coming to Macbeth's castle, for instead of leaves there are flags and sails, which on land are more unlooked-for objects. The flags represent every maritime nation under heaven, and many of them had a private significance of their own, like armorial bearings. So full of shipping were the docks themselves that from the train no water was to be seen, a state of affairs more embarrassing to the observer even than the position of the "Ancient Mariner" in the poem:

Vessels, vessels all around, and not a drop to swim in.

At the gate of the docks were sundry policemen, the chief of whom demanded our errand.

"We are come," said the captain, "to meet a passenger by the Antelope, arrived to-day."

"Ay, ay; she will be 'a Ditcher,'" was the reply; by which, as I was subsequently informed, was meant a ship that had come through the Suez Canal; "you'll see her flag yonder."

The speaker pointed to where, amid a clump of masts, there was one with an antelope running at right angles from it, and occasionally doubling, like a hare, in the gusts of wind. We were starting off, when the police sergeant exclaimed:

"Them cigars must be put out, gentlemen."

It was a damp, blowy, wintry day, and there was snow lying in many places, making the objects around it still more black and filthy; there was nothing out of doors, except the ends of our cigars, that was not dripping wet, and I don't think we could have set fire to anything if we had been armed with a pine torch and a barrel of petroleum.

"We may surely smoke on such a day as this," I murmured piteously.

"By all manner of means, if you like it, and it is approved of by your medical adviser," said the sergeant cynically, "but not in the Victoria Docks."

Deprived of the solace of his tobacco, my friend, who had been dolorous throughout our journey, became more melancholy than ever. "I am sure that poor dog will be dead," he said; "she was so ill when she started, that my friend wrote to me that it was ten to one against her living through the voyage."

I did not say anything, because it was too late, but I had my own thoughts of what must be the character of a man who could thus have brought an unoffending fellow-creature on such a day as that to the Victoria Docks to meet a dead dog. All that I had ever heard of the brutality and licentiousness of the military rushed into my mind. "The cook has got her in charge," continued the captain pathetically, "and has promised to take the greatest care of her."

It was curious that this person, so sublimely selfish as regarded humanity,

had such a tender feeling for his four-footed friend; it touched me in spite of my indignation, and, reminding myself that there is something of good in everybody, I remarked consolingly, "Women are generally kind to animals."

"Gracious goodness! do you suppose they have female cooks on board ships?" explained my companion with great contempt.

Being very domestic, and quite unseafaring, I *had* fallen into this error; I did not attempt to defend it against such a pitiless adversary, but even the worm will turn under certain circumstances, and when he presently remarked, for the third or fourth time, "I am sure that poor dog is dead," I answered, "Very likely," and began to whistle.

After many dangers from cranes with curved necks, and enormous bales in their beaks, which they flourished over our heads like shillalehs, and from heavy trucks moving along tramways at their own wild will, we came upon "the Ditcher." She was secured, to my great relief, quite close to the dock, so that we had not "to walk the plank" (as I have read—and even written of—in the Spanish Main), or to climb accommodation ladders which are anything but accommodating to those who (though of dauntless courage) have no nerves, and (though of immense intelligence) have weak heads. A host of sailors, employed as usual in the most active manœuvres, with ropes and pulleys, as though an execution on the largest scale was pending, were running about the deck, and of one of these my companion inquired for the cook.

Accordingly, from a dreadful cabin, apparently full of fire, appeared the functionary in question. Anything less like one's ideal, or even one's idea, of a man-cook I never beheld; he was a white man, I knew, because when he wiped his forehead, which was steaming with perspiration, a patch of a whitey-brown color marked the progress of his palm, but he looked like a black man. It must have been a very aggravated and protracted case of shipwreck, which would have induced me to eat an *entrée* from that hand; while, as to clear soup, I am convinced that the spur of starvation itself would never have accomplished it.

"Have you got a dog of mine on board?" inquired the captain, suppressing his emotion (as only military men and Mr. Fenimore Cooper's Indians have the gift of doing) so that you would have thought he was inquiring after a hat-box.

"Ay, and a strange traveller she is, sir; stone-blind, poor creetur; and when she came aboard with only half a coat."

"Is she better for the voyage, think you?"

"Yes sir; she's better, ain't she, mates?"

The cook appealed to three or four men who had gathered round us from motives of curiosity, which had evidently much increased when they understood the nature of our business.

"Ay, ay, that she is," said one. "She's hearty to what she was; she knows she's got to old England."

This I thought, even for the anecdotes of instinct, a little strong; but the interest the men obviously took in the dog was most noteworthy and touching. This blind, diseased creature, who had come on board among total strangers, had made friends with everybody; and my friend, as her owner, found himself the centre of attraction.

"You'll think her fine, captain," said another. "She does credit to the Antelope, she does."

"Let me see her; this gentleman" (he pointed disdainfully to me) "thinks she won't know me because she can't see me."

I at once became the centre of repulsion. The sailors evidently took it very ill of me that I should entertain any such doubts. They whispered together darkly, and, as it seemed to me, in connection with some design of keel-hauling me on the spot, for which, in the way of ropes and pulleys, there were such abundant conveniences. Then the cook took us, followed by an increasing crowd, to his berth, which was a hole in the paddle-box.

If our young people could only be shown such a chamber before they run away to sea, those who are not born idiots would certainly stop where they were. On a bunk (which was the cook's bed) in this unpleasant cabin lay the object of our visit; a small, wiry-looking little terrier, quite blind—indeed, it

had no eyeballs—and with bald patches upon its skin; a spectacle very sad to contemplate. At the voice of the cook, "Vic, Vic, my gal!"—he cried encouragingly, but with great tenderness—the poor creature wagged her tail, but did not rise; her blindness had taught her prudence.

"She knows her way about my cabin," said the man; "Lor bless yer, yes" (he spoke of it as though it was a boudoir filled with articles of vertu, which a less clever dog would have destroyed with knocking against them); "but the poor thing is aware as the door is open, you see, so doesn't ventur."

However, when he called to her again, she descended very slowly, and came out upon deck, moving very carefully and step by step; on the right was a grating, on which the crew were standing, and having tried this and found it difficult to walk upon, she turned to the left where we two stood. It was really a striking scene; the men—some dozen of them—in perfect silence, watching the poor creature's movements with intense interest, and my friend with his eyes (with tears in them) fixed upon his dog, and longing to call out to her, but forbidden by the compact between us.

First, in its slow, cautious manner, the dog came to me and smelled about me. I suppose I was not strong enough, or sweet enough; but, after a brief investigation—the result of which delighted the spectators, who had been all along convinced that there was nothing about me to attract anybody—she moved on toward her master. Then you might literally have heard a pin drop. The gallant captain, being in the height of fashion, had gaiters over his boot, and to them the dog at once gave her attention. Whether it was the gaiters or the rim of her master's trousers that caused the following phenomenon I could not discern, but suddenly the little creature raised her sightless eyes, as if in veritable thankfulness for the happiness vouchsafed her, and uttered a plaintive cry of recognition; the next instant she was scrambling blindly, but passionately, up the captain's legs, calling us all to witness by barks and yelps that it *was* her master, and that the desire of her heart for many a weary month had been at last accomplished.

As for Vic's owner, he cried like a child, and, lifting the dog up in his arms, covered it with caresses; while the sailors, so far from despising his weakness, were moved to admiration, and openly expressed their satisfaction that their sorely-afflicted little friend had at last found her master and come to the end of her earthly troubles.

"And now," said the captain triumphantly, as he walked toward the railway station with his precious burden, "you are, I hope, no longer a sceptic; you will believe your own eyes."

"No doubt," returned I; "and I also believe in Vic's nose. That she should have recognized you, after so many months, by the mere sense of smell is very remarkable. But I don't believe—and this is my quarrel with the anecdote-mongers of instinct—that she could have smelled you from Ceylon, or that the poor creature could have found her way home, even if she had had her eyesight, without having been booked through by the Peninsular and Oriental Company."—*Belgravia Magazine*.

FLEUSS'S METHOD OF BREATHING UNDER WATER.

HITHERTO, as is well known, when a professional diver went under the water to search for any object, or to assist in other operations, he wore a particular kind of dress, and was supplied with air by a tube connected with a pumping apparatus. All this is now to be given up. A process has been invented of breathing under the water without any of the ordinary appliances. The invention is due to the perseverance and skill of Mr. Fleuss, an officer of the mercantile marine, who at sixteen years of age went to sea as an apprentice, and afterward served in several ships. On passing the examination for second mate he joined the Peninsular and Oriental service, and visited most parts of the world. The promotion being somewhat slow, Mr. Fleuss subsequently attached himself to the British India Company, and speedily attained the position of second officer. This life gave him many opportunities of recognizing the importance of an improved method of diving; and as he was fond of mechanics and scientific studies, he speedily made himself master of the subject. He is still a young man of twenty-eight years of age. His invention offers a gratifying instance of what may be effected by study, determined perseverance, and independent exertion; and we feel assured that when it becomes fully known, it will be employed for many important purposes. After maturing his invention, and personally demonstrating its validity by going under water at public exhibitions in London, Mr. Fleuss patented the process in England and other countries.

What we have therefore to say on the subject is from ascertained facts, and, however extraordinary, is beyond the reach of cavil.

By Mr. Fleuss's process any person with sufficient nerve, and who is accustomed to diving, can exist for hours beneath the water without connection with the surface. A special dress with a helmet inclosing the head requires, however, to be employed. The dress has much the outward appearance of that hitherto used. The helmet is entirely closed, for there is no pipe to the air above water, as is customary with ordinary divers. The power of breathing depends on means within the sphere of the helmet and dress. To understand this, we must consider the composition of the air.

As is generally known, the atmosphere we breathe consists one fifth of oxygen, and the remaining four fifths of another gas called nitrogen. The mixture of these two gases is a strictly mechanical one; they have not entered into any chemical combination. The oxygen is the supporter of life; the nitrogen merely diluting it, so to speak, to a proper degree, for the purposes of our lungs. In breathing, the oxygen is partially lost by absorption into the system, and the exhaled air contains a large proportion of carbonic acid or—to call it by its more modern name—carbon dioxide, a gas which is a poison to animal life. According to Mr. Fleuss's process, a continuous supply of oxygen is procured from the helmet, where it is stowed in a compressed state, the supply being regulated by a valve under the

control of the diver. The original nitrogen in the lungs remains unaltered, and can be breathed over again along with a due admixture of the oxygen. The strange thing is the disposal of the deadly carbonic acid gas. What becomes of it? Is it bubbled up through the water? No, for the oxygen and nitrogen would go with it. A well-known chemical action is taken advantage of by causing the carbonic acid which is given off to be absorbed by caustic soda; the result being the formation of carbonate of soda. The caustic soda is contained in a small tin or ebonite case placed in the body of the dress. It is in solution, and confined in the pores of spongy india-rubber, which is perhaps the only soft material impervious to its corrosive action. A proper arrangement of tubing causes *the whole of the exhaled air to pass through this case*, which requires emptying and recharging about once a week—supposing that the apparatus is in daily use. To sum up the means by which Mr. Fleuss breathes in a dress hermetically sealed from external air: He takes down a supply of compressed oxygen gas, dilutes it with the nitrogen—which is naturally present in his lungs and in the diving dress when he puts it on, and which, remaining unaltered, he can, as we have already shown, breathe over and over again; and by bringing the exhaled carbonic acid in contact with caustic soda, transforms the deadly gas into harmless carbonate of soda. Such is Mr. Fleuss's invention or discovery, which will no doubt astonish every one with its beautiful simplicity, and call forth the usual amount of surprise in such cases, "that nobody thought of it before." Possibly many may have thought of it before. But it requires an unusual combination of perseverance, energy, chemical knowledge, and mechanical skill, to carry such thoughts to practical trial and ultimate success. Mr. Fleuss not only studied chemistry to carry out his pet idea, but he made his apparatus almost entirely with his own hands. Moreover, he donned his dress, fitted with this home-made apparatus, and descended—the first time he had been under water in his life—in public, and remained under more than one hour. So to the qualities already

mentioned, we must certainly add that of indomitable courage.

The advantages of Mr. Fleuss's apparatus over that which it is most certainly destined to supersede are numerous. There is no doubt, too, that its use will not be confined to subaqueous work. It might well form a most valuable addition to our fire-escape stations, for it would enable the wearer to enter into the densest smoke without any risk of suffocation. Its use in the rescue of unfortunate miners would also be possible without any fear from the deadly choke-damp. Wells and vats, where the heavy carbonic acid forms a layer beneath which no human being can go without almost instant suffocation, will also be penetrable by the wearer of Fleuss's apparatus; and in these several ways the apparatus will probably help in the saving of many lives. The advantages of the new diving system are mainly these: The diver requires but one attendant, to whom he can signal in case of need. The absence of an air-pipe relieves him of many anxieties as to his safety. He is free to move in every direction; and can creep under wreckage in a manner that the ordinary diver would consider hazardous, if not impossible.

By experiments and tests as to temperature and pulse after immersion for more than an hour, it has been conclusively proved that Mr. Fleuss's system of breathing under water is attended by no inconveniences. Last, and by no means least, the expense of the outfit is estimated at one half that required by the older method. The absence of pumps and gearing will at once account for the reduction.

In a manner suitable for a popular journal, we have now described this remarkable invention, which, had it been available a few months earlier, might have led to the speedy recovery of the bodies of those who suffered in the Tay Bridge disaster, of whom, up till the time we write, only about one half have been found. What a triumph in art, and what a solacement to the feelings it would be, if by Mr. Fleuss's process a great proportion of the still missing bodies were recovered for burial by friends and relatives!—*Chambers's Journal*.

LITERARY NOTICES.

CASSELL'S LIBRARY OF ENGLISH LITERATURE.
Vol. IV. Shorter Works in English Prose.
Selected, edited, and arranged by Professor
Henry Morley. With illustrations. Lon-
don and New York: Cassell, Petter, Galpin
& Co.

In our notice of a previous volume of this excellent series ("English Plays"), we described the general plan of "Cassell's Library of English Literature," and remarked that it promised to be "the most comprehensive in scope and the most thorough in execution of anything of the sort that has yet been attempted." This promise is now nearly fulfilled; and the present volume, we imagine, will do more than either of its predecessors to extend and establish the reputation of the series. For one thing, the field which it covers has been less often and less thoroughly gleaned than those dealt with in the previous volumes. The anthologies collected from English poetry are so numerous and so good that it is often a difficult matter to choose between them, since the best pieces are common to all; and the volume on "English Plays" was, as we pointed out on its appearance, open to criticism in several important particulars. But the materials for a brief general survey of the history and growth of English prose have been far less accessible, and have never been arranged in such convenient and practical form as in the volume now under notice.

The mistake commonly made in such compilations is due to the attempt to include as many passages as possible from the widest range of authors—the result of which is that the volumes containing them are seldom more than a promiscuous collection of "elegant extracts." Professor Morley has wisely discarded this plan, and, knowing that a work of art must be judged of in its entirety in order to be rightly judged at all, has either chosen complete pieces, or selected passages which are easily susceptible of being separated from their context. For example, from Mandeville's *Travels*, the famous section describing "The Land of Prester John" is reproduced entire; many of the "Paston Letters" are reproduced; a complete chapter from Caxton's "The Game and Play of the Chess" is given; and we also have complete Greene's "Pandosto; or, The Triumph of Time," upon which Shakespeare founded his play of "The Winter's Tale;" Sir Philip Sidney's "Apologie for Poetrie;" a dozen or more of Bacon's *Essays*; Bacon's "New Atlantis;" Milton's "Areopagitica;" Mrs. Aphra Behn's novel of "Oroonoko;" two chapters of Locke's "Essay on Government;" several of Steele's

and Addison's *Spectator* essays; one of Swift's "Drapier Letters;" one of Johnson's *Rambler* papers; the first letter of "Junius;" one of Sir Joshua Reynolds's "Discourses;" Burke's great speech on "American Taxation;" Burke's "Letter to a Member of the French National Assembly;" Miss Edgeworth's tale of "The Grateful Negro;" Sydney Smith's paper on "Female Education;" and detached essays by Coleridge, Southey, Hazlitt, Leigh Hunt, Charles Lamb, and others. These are the longer pieces, some filling as many as twenty of Mr. Morley's spacious quarto pages in fine print; and besides these there are numerous briefer illustrative passages, and specimen letters from all the famous letter-writers of the different periods.

Most of the passages from old writers have such of their words as are still current English spelt in accordance with the modern usage; but in some instances the ancient spelling, punctuation, etc., are purposely left untouched, in order that they may serve as illustrations of the language in successive periods. Of these specimen passages there are two of the fifteenth century, two of the sixteenth, four of the seventeenth, and six of the beginning of the eighteenth century.

It should be added that Professor Morley has not contented himself with merely selecting his material with the utmost care, but has embedded it in a consecutive narrative or history of English prose literature, and has enriched it with a most copious and valuable apparatus of notes, vocabulary, etc. Nothing that could make the work more adequate to its aim has been omitted; and we may truly say that from it alone the average reader may easily obtain a more exact idea of the gradual growth of the English language and literature than from all the promiscuous reading he would be likely to accomplish in a lifetime.

This volume, like its predecessors, "is illustrated with reproductions of rare and curious engravings, possessing a genuine historical value, and drawn from sources inaccessible to the general reader;" and it furnishes an excellent example of what part pictorial illustration should play in a work of such a character.

THE LAND AND THE BOOK; or Biblical Illustrations drawn from the Manners and Customs, the Scenes and Scenery, of the Holy Land, Southern Palestine, and Jerusalem. By Rev. William M. Thomson, D.D. With 140 illustrations and maps. New York: Harper & Brothers.

Among the popular aids to biblical study and interpretation, no work has held a higher

place in the general estimation than the Rev. Dr. Thomson's "The Land and the Book." The first edition was published upward of twenty-five years ago, and has never been wholly superseded by any work of a similar character; but during the quarter of a century that has elapsed since its appearance, the attention of the Christian world has been directed to the Holy Land to a degree previously unknown, and the patient and minute research of a generation of scholars, supplemented by the costly and thorough explorations of the American and English exploring societies, has accumulated a vast amount of new and valuable information in regard to the Bible lands and the Bible itself. Availing himself of this freshly accumulated knowledge, and of his own researches and observations conducted on the spot and amid the scenes described, Dr. Thomson has prepared a new edition of his work, which is much more comprehensive than the earlier one, and which embodies all the important results of modern research and discovery in the Holy Land. While its scope is thus enlarged, however, the general plan of the work remains unchanged, and those special features and characteristics which have secured for the book its long popularity, have been carefully adhered to. The plan and character of the work are too widely known to render extended comment necessary, but we may say in general terms that its aim is to interpret the scriptural writings by means of illustrations drawn from the scenes and scenery, the manners and customs of the Holy Land—to throw such light upon the Bible as can be derived from a study of the land in which the Bible was written, and the people to whom it was addressed. That this method would prove fruitful and interesting might easily be conjectured, and in point of fact Dr. Thomson's work gives a sense of reality and vitality to the sacred writings such as no amount of merely textual commentary and explanation could impart. By no means the least striking and valuable feature of the work is the pictorial illustrations, which are very numerous and of a quite exceptional degree of excellence. They have been reproduced either from original drawings or from recent photographs, and are scarcely less useful than the text itself, as a means of imparting information in regard to the scenes, people, and customs of Palestine. (The publishers request us to mention that the book is sold only by subscription.)

ADVENTURES IN PATAGONIA. A Missionary's Exploring Trip. By the Rev. Titus Coan. With an introduction by the Rev. Henry M. Field, D.D. New York: *Dodd, Mead & Co.*

The success of the Rev. Titus Coan in converting the Sandwich Islanders constitutes one

of the most striking and famous incidents in the history of Christian missionary effort; but very few, probably, are aware that before he set out upon the work which has made his name known and honored throughout the world, he participated in the first attempt that was ever made to introduce Christianity among the Patagonians. In 1833, before he had completed his course of study in the theological seminary at Auburn, he was invited by the American Board of Foreign Missions to undertake, in conjunction with another young man, an exploring expedition to Patagonia for the purpose of ascertaining what could be done for the natives, where a mission had better be located, and what should be the nature of the mission; and, accepting the invitation, he was landed in November of that year on the eastern coast, where he spent nearly three months in close contact with several of the Patagonian tribes. His adventures and experiences with them were not of a very striking character, and his inability, through ignorance of their language, to enter into close relations with them, prevented his making any very valuable observations; yet his narrative of the trip, like every genuine record of an exceptional personal experience, is remarkably interesting, and has lost but little of its freshness by the passage of time. The record is composed, for the most part, of a journal written at the time, and describes the voyage out, the daily incidents of the stay in Patagonia, and the return voyage by way of the Falkland Islands, where a considerable stop was made. To this account of his own experiences the author has added a summary of the experiences of later visitors and missionary toilers among the Patagonian and Fuegian tribes, which causes us to feel surprise, not that he and his companion accomplished so little, but that they escaped with their lives. Even in the dark annals of missionary sufferings and defeat there are few more dismal stories than that of the successive attempts to establish "stations" among these predatory and bloodthirsty savages. Appended to the volume is a useful "List of Writings relating to Patagonia."

A PRIMER OF AMERICAN LITERATURE. By Eugene Lawrence. Harper's Half-Hour Series. New York: *Harper & Bros.*

Unquestionably there are opportunity and material for a brief outline of American literature which should be both interesting and useful, but it can hardly be said that such an outline is provided in Mr. Eugene Lawrence's "Primer." Whatever other qualities may pertain to Mr. Lawrence's intellectual endowment, the faculty of criticism has assuredly been denied him; yet so little conscious is he of this that his aim throughout has been to

weigh and estimate rather than describe. As a descriptive record of American literature his "Primer" is even more absurdly inadequate than Mr. Richardson's, while of his critical verdicts it may be said that many of them are fairly entitled to a place among the curiosities of literature. What, for example, could be more infelicitous than to say of Channing that "when men would soften the dreadful aspect of slavery, Channing, in *graceful indignation*, held up all its crimes before mankind?" The ideas in Mr. Lawrence's mind are evidently that Channing was roused to indignation by the aspect of slavery, which is perfectly true; and that he was a graceful writer, which is also true. But it is not brevity to bring the two ideas together in such wise—it is simply confusion. And the little book is fairly crowded with these conjunctions of incongruous epithets and ideas. Mr. Higginson has shown in his "Short Studies of American Authors," how much of really interpretative and helpful criticism can be condensed into a page or a paragraph; but the ability to do so is one of the rarest and finest acquirements of the literary art.

SCIENCE PRIMERS. Edited by Professors Huxley, Roscoe, and Balfour Stewart. Introductory. By Professor Huxley. New York: D. Appleton & Co.

Of the excellent series of "Science Primers" the one that has been most eagerly awaited is Professor Huxley's "Introductory Primer," and now that it has been published expectations are not likely to be disappointed. It is brief—briefer than any of the special primers—but nothing that the author has previously written reveals more strikingly his thorough grasp of the elementary principles of knowledge and his felicitous ease of exposition. In scope it is strictly introductory—it guides the steps of the student up to the vestibule of the sciences, explains to him the field and limitations of each, and points him to the door by which it is to be entered. Upon the domain of science proper it does not enter; but if it did nothing more than lodge in the student's mind its clear definitions of the relations between "common knowledge" and "scientific knowledge," of what is meant by "laws of nature," "order of nature," "cause and effect," "weight," "attraction," "force," and the like, and of what constitutes the difference between "living" and "not living" bodies, it would still subserve a most useful and important educational purpose.

FOREIGN LITERARY NOTES.

PROF. DAVID MASSON is engaged on a new edition of the first volume of his "Life of Milton."

THE Bodleian Library has acquired a MS. containing the missing commentary on Proverbs by the famous Abraham Aben Ezra.

M. ODOBESCO has published in the Roumanian language a costly work which treats comprehensively of the relics of Scythian antiquity discovered in Russia.

THE Marquis de Vogtlé, who possesses all the papers of Villars, is going to publish a new edition of the memoirs of the victor of Denain, and also two volumes of selected letters.

M. ZOLA and his pupils have just published jointly a volume of novelettes entitled "Les Soirées de Médan" (Charpentier). Médan is the name of the village near Paris where M. Zola has a country house.

M. RENAN, after having brought out the next, which is also the last, volume of the "Origines du Christianisme," intends to publish a translation of Ecclesiastes, with a critical introduction, which he has ready for press.

MR. SALA is occupied in preparing for publication in a volume the series of letters entitled "America Revisited," which he contributed to the *Daily Telegraph*. The book will be illustrated after the manner of his work on modern Paris.

A COMMITTEE, composed of SS. Zaragoza, Gimenez de la Espada, and Abella y Ferreiro, has been appointed to direct the publication of the "Relaciones topográficas de América," written in the time of Philip II., for the Congreso de Americanistas to be held in Madrid.

PROF. SAYCE is engaged upon a thoroughly revised and corrected edition of George Smith's "Chaldean Genesis." The new edition will contain some fresh matter and translations of tablets recently brought to the British Museum.

STUDENTS of picture-writing will be glad to know of a curious volume of pictorial inscriptions from Southern China, lately acquired for the Oriental Department of Manuscripts in the British Museum. The component characters are principally men, animals, birds, trees, heads, and ornamental devices.

WHERE did the ancient Assyrians come from? Dr. Oppert, Professor of Assyriology in the College of France, Paris, stated that he and other scholars had succeeded in tracing them to an island in the Persian Gulf, now called Bahrain by the Arabs. It is the centre of a small archipelago, and, if explored, would perhaps yield relics interesting to anthropologists.

THE increasing number of spelling reformers in England, America, and the Continent has created a desire among the members of the various associations for some means of strengthening the bond of union. There is some talk of an International Congress of Spelling Reformers, to be held in London or on the Continent in the autumn.—*Athenæum*.

WE have received from America a new poem on the Life of Buddha, by E. D. Root, who boldly calls himself an American Buddhist. The poem is called "Sākya Buddha: a Versified, Annotated Narrative of his Life and Teachings" (New York). The author tells us that his poem was nearly finished when he received Edwin Arnold's "The Light of Asia; or, the Great Renunciation." Being himself a working-man, and not a scholar, he speaks with great modesty of his own poem, as compared with Mr. Arnold's. But his veneration for the great founder of the Buddhist faith, he says, would not allow him to suppress his tribute of gratitude to the memory of Buddha Sākya Muni.—*Academy*.

THE translation of European works into Chinese is now being systematically undertaken by the professors and pupils in the College for the Study of Foreign Languages at Peking. At the present moment Mr. Fawcett's "Political Economy," a "History of Russia," Tytler's "Universal History," and Bluntschli's "Droit International Codifié," are in course of translation; while at the same time Dr. Dudgeon is preparing a work in Chinese on "Human Anatomy," Prof. Billequin is dealing in the same way with "Chemical Analysis," Dr. Martin with "Mathematical Analysis," and Messrs. Seih Kan and Li Shen-lan are arranging a series of mathematical exercises.

SCIENCE AND ART.

MILK AND LIME WATER.—Milk and lime water are now frequently prescribed by physicians in cases of dyspepsia and weakness of the stomach, and in some cases are said to prove very beneficial. Many persons who think good bread and milk a great luxury frequently hesitate to eat it for the reason that the milk will not digest readily; sourness of stomach will often follow. But experience proves, says the *Journal of Materia Medica*, that lime water and milk are not only food and medicine at an early period of life, but also at a later, when, as in the case of infants, the functions of digestion and assimilation are feeble and easily perverted. A stomach taxed by gluttony, irritated by improper food, inflamed by alcohol, enfeebled by disease, or

otherwise unfitted for its duties—as is shown by the various symptoms attendant upon indigestion, dyspepsia, diarrhœa, dysentery, and fever—will resume its work, and do it energetically, on an exclusive diet of bread and milk and lime water. A goblet of cow's milk may have four tablespoonfuls of lime water added to it with good effect. The way to make lime water is simply to procure a few lumps of unslaked lime, put the lime in a stone jar, and add water until the lime is slaked and of about the consistence of thin cream; the lime settles, leaving the pure and clean lime water on the top.

THE MAGNETIC POLE.—It is well known that the mariner's compass does not point to due north, a fact which requires to be taken into consideration by those who have occasion to use that valuable apparatus. Study of terrestrial magnetism has led a F.R.A.S. to the conclusion that the various changes of direction which the magnetic needle has undergone within the last three hundred years can be explained by supposing that its movements have been governed chiefly by those of a *strong* magnetic pole revolving round the pole of the earth in about five hundred years. The present declination of the needle at London is $18^{\circ} 50'$ west of due north. In 1892 it will be $16^{\circ} 10'$ west, and will go on diminishing until about 1990 it will be at 0° or due north. By the year 2702 the declination will be $11^{\circ} 17'$ east, the same that it was in 1580; and the magnetic pole will then have made a complete revolution in four hundred and ninety-two years.

THE TEMPERATURE OF THE SUN.—Some curious facts in connection with this subject are given in a recent number of a French scientific journal. The question of the temperature of the sun, of the highest importance both from an astronomical and a meteorological point of view, has been the subject of investigation by many eminent savans, but we cannot say that a solution has yet been approached. When we consider the immense progress which has been made in cosmical physics, it would appear that the temperature of the sun ought to have been known long ago. Newton, one of the first investigators of the problem, tried to determine it, and after him all the scientists who have been occupied with calorimetry have followed his example. All have believed themselves successful, and have formulated their results with great confidence. We give, in the chronological order of the publication of the results, the temperatures (in centigrade degrees) found by each of them: Newton, $1,669,300^{\circ}$; Pouillet, 1461° ; Zöllner, $102,000^{\circ}$; Secchi, $5,344,840^{\circ}$; Ericsson, $2,726,700^{\circ}$; Fizeau,

7500°; Waterston, 9,000,000°; Spoerer, 27,000°; H. Sainte-Claire Deville, 9500°; Soret, 5,801,846°; Vicaire, 1398°; Violle, 1500°; Rossetti, 20,000°. There probably does not exist in the annals of science a more astonishing contradiction than that revealed in these figures. One is struck in reading on the one hand the names of these masters, and on the other these figures, which vary from 1400° to 9,000,000°. The subject will probably be discussed for a long time yet before anything like an agreement in the results is arrived at. The most important laws of the physical sciences are brought into play, and we still want a vigorous enunciation which may be utilized to any extent. It is in the principles themselves that the unknown and uncertain are found, leading to these contradictions. All the misunderstandings as to the basis of the question have long been got rid of, and the problem is brought back to it simplest and most precise expression. Without touching on the question of the constitution of the sun, what is sought is simply the temperature of a supposed homogeneous star, all the strata of which have the same temperature, of a mass equal to the real mass of the sun, of an emissive power equal to the mean emissive power of the surface. Thus the question is put with precision and clearness, and we need not despair of seeing it some day fully solved.

TOUGHENED GLASS AS SLEEPERS FOR RAILWAYS.—From a statement made at the last meeting of the Iron and Steel Institute, we learn that toughened glass can be used instead of iron as sleepers for railways. The molten glass is cast in moulds into the several forms required; is afterward heated to a high temperature, and plunged into a bath of cool oil, "the result being that the glass becomes converted from its own characteristic brittleness to the remarkable tough fibrous material known as toughened or tempered glass." A similar effect, as was stated, can be produced by passing the moulded glass through an annealing oven. The strength and resisting power of the glass thus prepared may be judged of from the fact, that a weight (nine hundredweight) let fall from a height of seventeen feet upon a plate a little more than an inch thick, failed to break it. And where glass sleepers have been laid by way of experiment, they stand wear and tear as well as iron, perhaps better, for they do not corrode. They are made in three-foot lengths, so shaped on the upper surface that the rail when placed thereon shall exactly fit. If glass can be turned to account in this way, why not as tools, implements, and other mechanical appliances? Its immunity from rust gives it an eminent claim to consideration.—*Chambers's Journal*.

GROWTH OF THE EARTH.—The millions of *œrolites* descending upon the earth as an everlasting shower over all its surface prove that the earth is growing; the gradual rise of its oceans proves the fact, and the great truth is also demonstrated by the bottoms of all these oceans, according to their various depths, constantly getting filled up by primary formations. In short, the universal law of terrestrial growth is demonstrated by every shell upon the shore, which, by its formation, is just that much permanently added to the bulk. But sinking into the bowels of the earth as deep as man can reach, proves the growth of the earth far more strongly than all the facts and words which are available on the momentous question; for no matter how far down, every inch of the descent was once the surface, however low it may now be out of sight, by the accumulation of creative increase over it since the time. Thus, so far as we have been enabled to penetrate, and the rule holds good over every part of its surface, we find the strata, however deep we may descend, all lying, as to time, in the order of their formation. They cannot be otherwise, as no convulsions of nature could reverse the position of one stratum by superimposing it upon another. If we sink down through the strata to the depth of say a thousand yards, we pass through the works of several geological epochs, the first one that on which the drift of the Deluge rests, the latest formation, the next—if in the sinking there is no missing link—a step in time earlier, and so on in succession, until we reach the lowest stratum at the depth mentioned, the oldest one in the series. There it is just where it was deposited, then on the surface of the earth, perhaps more than a million years ago, while all the others have been in later times superimposed in their respective geological epochs, up to the surface. There is another such epochal formation going on and getting thicker under all oceans since the present continental features of the globe arose, which will yet be dry land, and will be the latest formation for the geologists of the remote future.—*Colburn's New Monthly Magazine*.

SPECIFIC AGAINST TYPHOID.—Dr Guillaume, of the French navy, in a recent paper on typhoid fever, speaks of the great benefit which has been derived from the use of coffee. He has found that no sooner have the patients taken a few tablespoonfuls of it than their features become relaxed, and they come to their senses; the next day the improvement is such as to leave no doubt that the article is just the specific needed. Under its influence the stupor is dispelled and the patient rouses from the state of somnolency in which he has been since the invasion of the disease; soon, all the functions take their natural course and he enters

upon convalescence. Dr. Guillaume gives to an adult two or three tablespoonfuls of strong black coffee every two hours, alternated with one or two teaspoonfuls of claret or Burgundy wine—a little lemonade or citrate of magnesia to be taken daily, and after a while quinine.

VARIETIES.

WINGED WORDS.—

1. I should never have made my success in life, if I had not bestowed upon the least thing I have ever undertaken the same attention and care that I have bestowed upon the greatest. [Compare this—from a letter of Charles Dickens to his son Henry—with the following.]

2. No one will succeed in great things unless he first succeed in small things.—*St. Francis Xavier.*

3. It is only when we are not able to commit any more folly that we recognize what fools we were.—*Miss Attie O'Brien's From Dark to Dawn.*

4. Resignation only changes the character of our suffering, it does not remove it; it sanctifies sorrow, but it does not lessen our sense of loss.—*The same.*

5. A tender conscience is like a tender eye which the least mote disturbs and annoys, making it water to wash off the stain, and express regret that ever it came there.—*Old Life of St. Thomas of Hereford.*

6. Eyes not trained in honorable habits are almost uncontrollably inquisitive.—*Mrs. Bishop's "Elizabeth Eden."*

7. Things gained are gone, but great things done endure.—*"Atalanta in Calydon."*

8. Gratitude is a heavy burden to bear. If you do a man a good turn, he generally finds it too irksome to be grateful, and so becomes your enemy.—*"The Golden Butterfly."*

9. The exasperating thing about revenge is that it never satisfies, but leaves you at the end as angry as at the beginning. After all, one might just as well forgive a fellow at once.—*The same.*

10. A Greek poet implies that the height of bliss is the sudden relief of pain. But there is a nobler bliss still; the rapture of the conscience at the sudden release from a guilty thought.—*Bulwer.*

11. Nothing looks so like guilt as frightened innocence.—*Kathleen O'Meara.*

12. It is not what we earn, but what we save, that makes us rich. It is not what we eat, but what we digest, that makes us strong. It is not what we read, but what we remember, that makes us learned. It is not what we intend, but what we do, that makes us useful. It is not a few faint wishes, but a life-long struggle, that makes us valiant.—*Anon.*

THE BEDROOM.—The room in which the enfeebled person has been sitting before going to bed has been warmed probably up to summer heat; a light meal has been taken before retiring to rest, and then the bedroom is entered. The bedroom perchance has no fire in it, or if a fire be lighted provision is not made to keep it alight for more than an hour or two. The result is that in the early part of the morning, from three to four o'clock, when the temperature of the air in all parts is lowest, the glow from the fire or stove which should warm the room has ceased, and the room is cold to an extreme degree. In country houses the water will often be found frozen in the hand-basins or ewers under these conditions. Meanwhile the sleeper lies unconscious of the great change which is taking place in the air around him. Slowly and surely there is a decline of temperature to the extent, it may be, of thirty or forty degrees on the Fahrenheit scale; and though he may be fairly covered with bed-clothes he is receiving into his lungs this cold air, by which the circulation through the lungs is materially modified. The condition of the body itself is at this very time unfavorable for meeting any emergency. In the period between midnight and six in the morning, the animal vital processes are at their lowest ebb. It is in these times that those who are enfeebled from any cause most frequently die. We physicians often consider these hours as critical, and forewarn anxious friends in respect to them. From time immemorial those who have been accustomed to wait and attend on the sick have noted these hours most anxiously, so that they have been called by one of our old writers, "the hours of fate." In this space of time the influence of the life-giving sun has been longest withdrawn from man, and the hearts that are even the strongest beat then with subdued tone. Sleep is heaviest, and death is nearest to us all in "the hours of fate." The feeble, therefore, are most exposed to danger during this period of time, and they are most exposed to one particular danger, that of congestion of the lungs, for it is the bronchial surface of the lungs that is most exposed to the action of the chilled air; and, in the aged, that exposure is hazardous.—*Dr. B. W. Richardson in "Good Words."*

DEMOCRACY.

I HEAR the beat of its countless feet,
And the wind of its ceaseless sigh:
Nothing great may live that does not give
To its force, as it rushes by.

BUT under its feet rich grows the wheat,
And the dry rock pours out water.
They say it is evil, or even the Devil;
It is that—or else God's daughter.

—*The Spectator.*

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